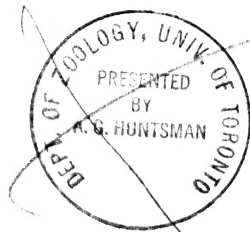


Presented to
Dr A. G. Huntsman
by A. H. D. Putnam
Feb 1934



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There is sufficient demand nowadays for retailers to be able to figure out how much fish they can sell. There should be no come-backs, and if all the whole-sale distributors would act together on this, the habit can be stopped with beneficial results to all concerned.

CASH AND CARRY SYSTEM.

A material reduction in the price of fish to the consumer and a lightening of the overhead expenses of the retail fish dealer can be made by introducing the "cash and carry" system of doing business. This means that the customer will call at the store, pay cash for goods received, and carry them away.

Deliveries and credits have long been the curse of the retail fish business as well as other trades. The fish business suffers more, perhaps, than others, as the housewife simply hates carrying a parcel of fish home.

Telephone orders, deliveries and "charge it up!" is the burden saddled on the trade by modern laziness and a desire on the part of the ladies to get out of the way "mother used to do." We, mere men, would be glad to see our women-folk revert to mother's ways in more things than the pies "she used to make" and one of them is the old-fashioned style of shopping in the morning with a market basket.

The modern house-wife is to blame for the high cost of living. She telephones her butcher or fish dealer to send up two pounds of halibut, salmon, haddock or cod, and "charge it!" The dealer is forced by this system to keep delivery wagons, two or more telephones with a clerk to answer them, and a book-keeper to keep track of charge accounts. To maintain these, costs much money, and who pays for it? The consumer to be sure!

To deliver a parcel of fish, whether one pound or ten pounds, costs on an average five cents a parcel—more in some towns, less in others. Charge accounts mean an additional cost of from 2 per cent to 5 per cent, according to the class of trade. Extra telephones mean from \$25 to \$40 per annum. All these extras have to be added on to the price of the goods. Then again, orders by telephone are not always satisfactory, and the customer loses the privilege of selecting the particular fish most desirable and is narrowed down to the varieties he or she is familiar with.

Complaints on the high price of fish these days are common, but the consumer is the one to be blamed. By forcing the dealer to cater to laziness, they have penalized themselves and suffer in every way, and the dealer finds his worries magnified.

By returning to the old-fashioned method of shopping in the morning with a market basket, paying cash, and carrying the goods away, the customer benefits. They have the choice of looking around the store and selecting the particular fish or piece of fish they desire. They can also become acquainted with new lines of fish foods and thus enlarge the range of the menu.

We would strongly advocate at this time the introduction of the "cash and carry" system in our retail fish stores. Let the dealer make two prices—one for credits and delivery, and the other for cash and car-

rying away. The public can be educated, and in these war-time days, they are willing to be educated, and the dealer can do it without much trouble.

Both the Canadian Food Control and the Food Administration of the United States endorse the "cash and carry" system. It is a sure antidote to the high cost of living. The readers of this magazine engaged in the wholesale or retail trade would do well to preach this idea to customers and begin by marking their fish at the two prices. The sooner it is started the better, as no one knows how long the war is going to last, and in the next call for man-power in food production and the fighting line, the men to be called will come from the shop clerks and delivery wagon drivers of the stores. It is well to be prepared.

GREAT INCREASE IN HOME CONSUMPTION.

Statistics collected by the Food Controller's Office show a wonderful increase in fish consumption in Canada during the latter part of 1917 over similar periods in the previous year. A Toronto wholesale house reports an increase in sales of 80 per cent in the period from July to November, 1917, over the same period in 1916. Another wholesaler in an Ontario town reports the sale of 1,020,882 lbs. of fresh and frozen fish for October, November and December, 1917, in comparison with 786,433 lbs. in the same period of 1916. In salt and smoked fish his sales increased 35,000 lbs. in the same period.

A Montreal wholesale house reports an increase of 15,725 lbs. of fresh and frozen fish for the last three months of the year over the year previous. Another Montreal wholesale house reports that "there has been a decidedly large increase in the general sale of fish." A large wholesaler doing an extensive business in Quebec, Ontario and the West reports an increase of 80 per cent in Quebec sales, almost 300 per cent in Ontario, and 66 per cent in the West in the last six months over the same period last year. A wholesaler in an Ontario town reports sales of haddies and herring for October, November and December, 1917, as 38,182 lbs. compared with 25,338 lbs. for the same period in 1916.

An Ontario retail house with several stores reports for the last three months of 1917 sales of 74,898 lbs. of lake fish and 153,310 lbs. of sea fish as compared with 32,047 lbs. of lake fish and 107,139 lbs. of sea fish in the same period in 1916. Another Ontario retail house reports for corresponding periods sales of 21,040 lbs. as against 17,720 lbs.

These are an indication of reports from all over the country and represent increases of from 20 per cent to 300 per cent according to the effort made. A conservative increase would be 50 per cent generally.

In practically every instance credit is given to the Food Controller for increasing the consumption, and

from a patriotic point of view, the increased sales of fish represent a gratifying surplus of exportable meats.

ONTARIO GOVERNMENT'S "CHEAP" FISH.

The Ontario Government Fisheries Sales Branch are notifying their customers that "owing to the increased cost of obtaining winter fish" the delivered price in Eastern Ontario will be 12½ cents for whitefish and trout, allowing a retail price of 16 cents to the consumer. One-fifth of the commercial catch caught by the fishermen of Ontario must be placed at the disposal of the Government. The following condition is attached to the granting of the fishermen's license.

"Fishermen must supply any portion not exceeding twenty per cent of his catch, all fish to be in first quality, at a price not exceeding eight cents per pound for whitefish, trout, or pickerel; or at a price not exceeding six cents per pound for herring, pike, or other coarse fish, and not exceeding nine cents for catfish, skinned and dressed." The price will be fixed by the department.

"All fish to be delivered, boxed, and iced, and dressed if required, f.o.b. cars at the point of shipment."

The license will be subject to cancellation for non-performance of this condition.

With regard to herring (frozen) these are being quoted by outside firms at \$5.50 per 100 lbs., f.o.b. Toronto, and \$6.00 f.o.b. Montreal, wholesale. We can't see where the Ontario Government is doing any better than the legitimate dealer. However, they are stimulating the interest in fish foods even if they do nothing else.

HIGH PRICES FOR PACIFIC COAST FISH.

The public all over Canada are complaining of the high price of halibut and salmon. In fact, these two fish have gone into the luxury class. During November, 17¾ cents per pound was paid to the fishermen for halibut on the dock at Prince Rupert, and advices to hand from the Coast state that the Deep Sea Fishermen's Union have increased their prices on company boats to three cents per pound for halibut the year round, two cents for black cod, and a cent and a quarter for other varieties. On halibut, this is an increase of 33 1-3 per cent.

When one considers that the majority of the halibut fishermen on the Pacific Coast are aliens of Scandinavian extraction who merely do the actual fishing and look after their gear, and who neither pay for the bait, ice, gear, fuel, or food used on the company vessels, nor even bear a hand in the handling of the ship—which in most cases carries a sailing crew—we are of the opinion that the increase is absolutely unwarranted.

Halibut fishermen on the Pacific have been earning from \$200 to \$400 per month—sometimes more than

that, and seldom less than the minimum. Their Union is a strong one—so strong that the producers simply have to knuckle under to its demands or face the inevitable strike. No strike-breakers can be imported to buck them and they have things very much their own way.

The officers of the Union are often clear-headed, reasonable men, but they are merely puppets in the hands of the members. When these modern sea-rovers feel that things are palling a little, they institute a strike for either more money or more grub or more time in port, and the Union officials, must, willy-nilly, present the men's claims in the most favorable light. They never stick out for anything on the lesser side. War-time sacrifices in anything is not to be thought of by these Vikings.

These men sail to the fishing grounds as passengers. They are the aristocrats of the fishing fraternity. Skippers must handle them with kid gloves, or a strike will ensue. Truly, Labor exists in Utopia with the Deep Sea Fishermen's Union, and if it goes on much longer, feather-beds in the fo'c'sle and a boy to wait on each fisherman will become the order of the day on a halibutter.

With the anxious days now facing the Allies in the food problem; with the necessity for producing and conserving food-stuffs, and the Food Controller's efforts to increase the consumption of more fish in Canada to release beef and bacon so greatly needed overseas, the Deep Sea Fishermen's schedule for 1918 is nothing more or less than an unpatriotic hold-up. Halibut is no longer a poor family's meal, and with the D.S.F.U. boosting the price, it never will be.

When one considers the hard life of the Atlantic schooner and boat fishermen—Canadians all—and compares it, and the money they make, with the gentlemen-trawlers of Scandinavian origin and American citizenship on the Pacific, one is constrained to call for drastic remedies. And these remedies will come before long as both the United States and Canada are beginning to tire of the "dollar before all" spirit evinced by the Deep Sea Fishermen's Union.

ERASING THE BORDER LINE.

In our last volume, we had an editorial under the above heading and the border line referred to is that between the United States and Canada. Since then, the United States has thrown her weight into the fight against the despicable Hun, and the manner in which she is doing it, excites our admiration.

There is no tribute of pen praise that we can pay to the New England states for the manner in which they organized Halifax relief. The contributions from them, and the prompt action taken, the wholehearted sympathy extended by gifts of money, food, clothing, building materials and service can only be summed up in one word—splendid!

In the negotiations proceedings at Washington between the Fishery Commissions of Canada and the United States it is hoped that the *Modus Vivendi* licensing of fishing vessels will be abolished or modified; that motor vessels will be allowed to bait and fit out in Canadian ports; that the duty against U. S. fish be abolished, and a permanent joint Board be appointed to look after questions pertaining to International waters.

We are all in the same great game now. We have to feed England and the Allies and beat the Boche. If the United States needs more of our fish, let her have it, and let us speed up production in every way possible to maintain the requirements of our own market and those of our Allies.

TO CONSERVE SALMON FISHERIES.

The cannerymen of the State of Washington are seeking to co-operate with the canning interests on the Fraser River for the enforcement of regulations which will rehabilitate the salmon fishery of the Fraser. A committee has been appointed by the Washington Fisheries Association to take up the matter with the British Columbia authorities.

Various suggestions have been made, notably, that of closed seasons on the Fraser River, but this idea is not likely to meet with much success as it would mean the closing down of several canneries and the unemployment of many fishermen who depend on the salmon fishery for a livelihood. The abolition of purse-seining is recommended and seems to be favorably received by both sides.

Undoubtedly something must be done to preserve the Fraser River salmon. From the time they enter the Straits, the luckless fish have to run the gauntlet of the American traps, the seines and countless fathoms of gill-nets which bar the entrance of the river from "blue water" to the upper reaches. Spawning difficulties were greatly magnified by the slide at Hell Gate which barred the fish from reaching the headwaters and which affected the four year run of 1917.

In all probability, the International Fisheries Commission now at Washington will give attention to this question and find a remedy. At the present time, however, the most vital point to be considered is the production of fish for food. The urgent necessities of to-day must be fulfilled even at the risk of future extinction. This is War Time, and War Time measures and requirements are necessarily drastic to be successful.

FISH AND THE LAYMAN.

Few, indeed, can plumb the depths of the average citizen's ignorance of fish and of all things pertaining to fish. Real knowledge of fish is confined almost wholly to shore dwellers, those who go down to the sea, and those who handle what the fisherman

harvests from the sea. The CANADIAN FISHERMAN representative donned a fitting disguise and journeyed out among the common people with a listening ear and a receptive mind to acquire something of the piscatorial knowledge of the Canadian proletariat.

"Fish! fish!" says the lay consumer in effect, if not in so many words. "Don't talk to me about fish! It costs more than meat unless you happen to light on "Government" fish. (EDITOR'S NOTE:—It is almost superfluous to mention that there is no such thing as Government fish unless one designates the small dribble of whitefish, trout and suckers supplied by the Ontario Government.) If I telephone for fish, I get what the dealer likes to give me—which is really what no one else will take. If I buy frozen fish, I can't eat it. It has been frozen and thawed and refrozen by cold storage profiteers, and it's simply disgusting. How would I thaw it? How do you thaw anything? With heat, of course. Put it in warm water or place it near the stove.

Yes, sir! The fish business is rottener than the packing business. It's a ring—a combine—a trust! Why don't they fix the price of fish? It doesn't cost anything to catch. You don't have to feed fish. Fish is a gift—that's all it is! The fisherman simply dips his net in the water and hauls it out. It's pure velvet to everyone except the consumer.

Why don't they stop the export trade? All the good fish is sent over the border. That's not right. The people of Canada own the fish and the fisheries should be nationalized. What kind of fish do I eat? We-e-ll, halibut and salmon and oysters and finnan haddie—what other kinds can you get?"

Such trifling incidentals as capital invested in boats, the hazzards of the fisheries, the unremunerative catches, cost of ice, bait, fuel, gear, boxes, vessel outfits, fishermen's food, wages of shore labor, investments in necessary shore plant, transportation, losses through shrinkage and deterioration, selling expenses, storms, fogs, dog-fish, and one day a week to sell on, are but trifling incidentals in the layman's mind. Halibut, salmon, oysters and finnan haddie! Ye Gods! What about cod, haddock, hake, cusk, pollock, mackerel, whiting, soles, flounders, skate, sturgeon, herring, gaspereau, smelts, whitefish, trout, pickerel, pike, mullets, carp, bass, catfish, sword-fish, grey-fish, black cod, and so-on and so-on!

The moral is sufficiently obvious. The public must be taught all it can absorb about fish and fishing.

STOCK BARREN LAKES WITH FISH.

Following our S.O.S. call to Ontario fishermen and Mr. Feilding's article on the carp as a table fish in our November issue, we think the time has come when the utilization of many of our smaller lakes in the great so-called "barren area" of Algoma and Thunder Bay should be carefully considered from a food pro-

duction aspect. Why should these waters be neglected because they will not produce whitefish, herring or lake trout of marketable size, if they can be made to produce other fish such as carp, which obviously is in great demand, not only in war time, but also in peace time.

Why could not a certain defined area be set aside for an experiment? Many tons of pike, suckers and fish of similar low grade are now being shipped to the United States while carp, a far more rapidly growing fish and a fish much more economically produced is almost entirely neglected, largely owing to prejudice.

Has not the time arrived for the establishment of an inland fish experimental station on the lines of one or other of those useful institutions now doing such valuable practical work in the United States?

We spend, annually, large sums of money on experimental farms to establish methods of cheap food production on dry land, why should not the same attention be given to the food production of our land under water.

Surely this is the time to stimulate to the utmost the food production of waters now producing nothing and entirely in our own control.

PISCATORIAL PARAGRAPHS.

The Ontario Government intend to establish cold storage facilities to take care of the Fall runs of lake fish in connection with their Fisheries Sales Department. Eight million pounds of fish at "cost" price are to be available to the Ontario people this coming season.

Mr. H. C. Walby, late of the Canadian Fish & Cold Storage Company, Ltd., Prince Rupert, is now in business in New York, at 21 Park Row, under the firm name of Walby and Company.

Mr. P. Sandvick, late of Prince Rupert, has returned from a visit to Norway, and is now in New York.

Major Hugh Greene, Director of Fish Supplies for Overseas Canadians, and representing the British Board of Trade, is permanently located in Montreal, with an office at 211 St. Nicholas Street.

The Canadian Fisheries Commission, consisting of Chief Justice J. D. Hazen, former Minister of Fisheries; Mr. G. J. Desbarats, Deputy Minister of Naval Service, and Mr. W. A. Found, Superintendent of Fisheries, arrived in Washington on January 15th, to confer with the United States Fisheries Commission on matters affecting the fisheries in waters adjacent to the two countries. A tour of the Atlantic, Pacific and Great Lakes fishing ports will be made later to ascertain the views of persons interested in the conservation of the fisheries. The question of the Modus

Vivendi license and the free entry of American and Canadian fishing vessels into the ports of each country will be discussed. No better opportunity exists than the present to amicably settle the outstanding fishery disputes between Canada and the U. S., and the Commission is entrusted with an important task. It is to be hoped that something definite will be accomplished this time.

The United States Government will license all fishermen fishing in the salt water of the Atlantic and Gulf Coasts. This is being done in order to increase production of fish as under license from the Federal Government, the restrictions imposed by States licenses on State fisheries will not hold. The license control will go into effect on February 15th, and will largely supersede local laws which now discourage fishermen in producing the maximum of catch. Due regard will be given to the conservation of a certain fish and restricted fishing areas, but the new regulations will mean a "wide open" fishery until such time as the Food Administration considers the fish supply ample. Similar regulations will be made for the Pacific fisheries later.

The Alaska salmon pack for 1917 is the largest in its history. The pack will aggregate 5,300,000 cases, valued at \$40,000,000—almost twice the value of the record catch of 1916. The salmon pack of Alaska alone is equal to the value of the whole Canadian fisheries, and to think that we bartered away our chances to secure this gold-mine!

The fine steam trawler "Baleine," now owned by the Leonard Fisheries, Ltd., will be in operation shortly. The "Baleine" was built in Dunkirk, France, and is regarded as one of the best types of long voyage trawlers. For a number of seasons she fished out of St. Pierre Miquelon and salting her catches. Canada's fleet of steam trawlers is now increased to five—one on the Pacific and four on the Atlantic.

According to the "Vancouver Province," the B. C. halibut fishermen are "eager to aid in the production of food, but cannot live on their present wages." According to an official in a cold storage company operating boats, fishermen's wages average \$180 a month all the year round and some are able to earn \$230 per month. If they are granted the price schedule set by their Union, the average wage per man will run from \$300 to \$350 per month. If this isn't cold-blooded graft, we'd like to know what is. No wonder halibut is high.

Professor Prince, Commissioner of Fisheries, states that the annual catch of Canadian fish is 1,140,000,000 pounds. The annual consumption prior to the estab-

ishment of the Food Control was something like 203,000,000 pounds. This has probably increased to 300,000,000 pounds now.

Ten million cans of grey-fish have been sold by canners since the name was changed and the fish declared fit for food. On the Pacific Coast, whale-meat is meeting with great favor. The U. S. Food Administration intend to see that more menhaden is used for food rather than for oil and fertilizer purposes.

The Great Northern Canneries, Vancouver Island, will can herrings for shipment to France and for home consumption.

The United States Government has set the following prices on Alaska canned salmon, f.o.b. Alaska. Red Salmon, \$2.35. Medium Red Salmon, \$2.25. Pink Salmon, \$1.65. Chum Salmon, \$1.60. To these prices must be added freight charges, brokerage, and general handling expenses.

THE ANNUAL FISHERIES REPORT.

The fiftieth annual report of the Marine and Fisheries Department has been issued and the value of Canada's fish production has jumped to \$39,208,378 — an increase of \$3,347,670 over the year previous and the greatest in the history of our fisheries. Year by year, the value of our fisheries has been increasing, but we are not yet satisfied with the development of the sea fisheries on both coasts, and not until steam trawling and cold storages are established will we ever reap an adequate harvest of the vast fishery wealth adjacent to our coasts.

Only with steam trawling will the harvest of ground-fish be properly garnered and similarly, steam drift net fishing will largely increase the herring fishery. Cold storages are essential to take care of the catch, as the Canadian market will never absorb it all. The United States offers a ready market for various kinds of Canadian fish: Great Britain is importing Canadian fresh frozen fish in millions of pounds and will continue to do so for an indefinite period, and our salt and dried fish trade is, and will be, limited only by the catch.

On the Pacific coast, steam trawling is the only means of harvesting the prolific ground-fish other than halibut, and the cities and towns of the west will absorb great quantities of these so-called "scrap" fish as the halibut becomes scarcer and dearer.

There is no indication that meats will ever come back to their former abundance. Fish will, more and more, replace meat as a food for the North American peoples, and the War has had the effect of bringing fish to the fore as a substitute for meat. The demand now created will continue and will be largely augmented before the unknown close of the conflict.

The greatest field for development is in the salt water oceans on both coasts. The lake and river fisheries are limited and must be regulated to prevent extinction. There are yet hundreds of lakes in Canada untouched, but remoteness from transportation facilities preclude their utilization. They will remain as reservoirs of future food for the coming population of the northern latitudes of Canada.

No better argument for the use of modern methods in sea fishing can be had than from a perusal of the annexed statement taken from the report. The hook and line fishery from schooners, dependent upon supplies of bait, favorable weather and freedom from fog and dog-fish will never ensure the maximum of production. The summary follows:

In comparing the results of one season with another it must not be forgotten that the volume of production is affected by certain natural conditions which differ greatly from year to year. For instance, every fourth year there occurs on the Fraser river a "big run" of salmon. In the following years the "run" gradually diminishes till it reaches its poorest stage in the year preceding the next "big run."

The masses of herring and mackerel that visit our shores vary in volume annually — the latter especially being extremely erratic in their movements. Our hook-and-line fisheries for cod, haddock, hake, halibut, etc., are dependent on a supply of herring for bait, and a scarcity or abundance of this bait fish immensely affects the output of the line fishermen. Dogfish are more numerous in some seasons than in others, and destroy edible fish and gear to such an extent as to stop operations at times. Lastly, the state of the weather, by limiting the number of fishing days or permitting operations on the greatest possible number of days in the course of a season, affects the production of all kinds of fish perhaps more than any other natural agent.

The season under review was adversely affected by several of these conditions. The poorest salmon year in the cycle of four on the Fraser river occurred; there was an abnormal amount of unfavourable foggy weather on the Atlantic coast; the spring herring fishery in the gulf of St. Lawrence was greatly curtailed as a result of ice remaining on the coast till a late date; and the summer and fall herring fishery all over the Atlantic coast was a very poor one.

Under these conditions the production of one or two of the chief kinds of fish during 1916 fell somewhat below that of the year before. For example, the salmon catch was 171,101 hundredweights less. In the northern part of British Columbia, where there is no quadrennial fluctuation as in the southern part, the 1916 catch was greater, however, than that for 1915.

The catch of cod was 126,525 hundredweights less, while that of halibut fell short by 83,328 hundredweights.

The quantity of herring landed was 143,460 hundredweights less, and of mackerel 24,915 hundredweights less than in the preceding year.

On the other hand, there was an increase of 35,621 hundredweights in the lobster catch, and an increase of 10,499 hundredweights in the catch of hake and pollock.

Owing to the greatly increased demand for fish, in the home market, the United States, and overseas, higher prices prevailed, with the result that the total market value of the fisheries for the fiscal year 1916-17 amounted to \$39,208,378, which is the greatest annual value the industry has ever produced. It is \$3,347,670 greater than the value for the year 1915-16 and \$7,943,747 greater than that for the year 1914-15. To the total value the sea fisheries contributed \$34,386,013 and the inland fisheries \$4,822,365.

Our boat fishermen and those who fish in inshore waters now find the motor-boat indispensable. It gets speedily to and from the fishing grounds, and permits

operations over a greater area than the old sail-boat.

In the year under review there was an increase of 1,731 motor-boats, the total being 12,828.

Improvements are constantly taking place in the handling and manufacturing of cured fish of all kinds. The proportion of the inshore catch of cod, hake, etc., that is dried is annually growing less, while that used fresh and cut for the boneless trade is increasing and bringing enhanced values.

In the pickled fish trade, through the stimulus of the Fish Inspection Act, increased attention is being given to the production of better packages and to improving the grade and quality of the pack; an iron-hooped hardwood barrel superior to anything of the kind used in any other country is now being used in our salt mackerel trade.

Manufacturers of finnan haddie within the last four or five years have been turning out a very much improved article, with the result that the demand for and consumption of this popular fish is increasing rapidly.

The following table shows the value produced by each province, with the increase or decrease compared with the year 1915-16:—

Province—	Value produced	Increase	Decrease
British Columbia . . .	\$14,637,346	\$ 99,026	.....
Nova Scotia	10,092,902	926,051	.....
New Brunswick. . . .	5,656,859	919,714	.....
Quebec	2,991,624	914,773	.....
Ontario	2,658,993	.....	\$682,189
Manitoba	1,390,002	647,077	.....
Prince Edward Is- land	1,344,179	410,497	.....
Saskatchewan	231,946	66,056	.....
Alberta	144,317	50,183	.....
Yukon	60,210	.....	3,520
Totals	\$39,208,378	\$4,033,379	\$685,709
Net increase . . . . .	.....	.....	\$3,347,670

The large decrease in the value of the Ontario fisheries is due to smaller catches of trout, whitefish, pike, and pickerel. The last named is responsible for almost half the decreased value.

The total number of persons engaged in the various branches of the fishing industry during the year under review was 95,304. This is a decrease of 6,878 when compared with the preceding year.

Of the total number, 85,367 were engaged in the sea, and 9,937 in the inland fisheries. There were 9,192 on vessels, tugs, and smacks; 59,697 in boats; 735 fishing without boats; and 25,680 on shore, in canneries, freezers, and smoke-houses, etc., cleaning and preparing the fish for market.

The amount of capital invested in vessels, boats, fishing gear, canneries, etc., was \$28,728,962, an increase of \$2,873,387. In the sea fisheries there was invested \$25,971,664, and in the inland fisheries, \$2,757,298.

There were 1,965 vessels, tugs, and carrying smacks in use as against 1,984 in the preceding year. Of the 40,105 boats in use, 12,828 were fitted with gasoline engines; an increase of 1,731. Six years ago not more than 4,588 gasoline boats were used in fishing.

A. R. Whittall Can. Co., Ltd., Montreal, have sent their customers a very attractive calendar. This company has recently made very extensive additions to their plant to enable them to take care of new business.

DEPARTMENT OF THE NAVAL SERVICE.

Notes on the results of Sea Fishing operations in Canada during the month of December.

Reports and returns from Fishery Officers on the Atlantic Coast show that the unusually cold and stormy weather of December adversely affected the landings of some of the chief kinds of sea fish.

The total quantity of cod, haddock, hake and pollock landed in eastern Canada was 71,805 cwts. against 86,924 cwts. during December last year. The landings of haddock, hake and pollock were over 23,000 cwts. less, but those of cod were over 8,000 cwts. greater.

Only 290 cwts. of herring were landed on the Atlantic coast, while in British Columbia 69,021 cwts. were landed. The total for both coasts, however, is 54,493 cwts. less than that landed in December 1916.

The total of halibut landed, which is practically the British Columbia catch, is over 6,000 cwts. less than last year's December total.

The smelt fishery, which is carried on mainly in Prince Edward Island and the Nova Scotia and New Brunswick counties bordering the gulf of St. Lawrence, resulted in a catch of 21,347 cwts., being an increase of 6,257 cwts. compared with December last year.

The new season's lobster fishery has been in progress since the 15th of November in the counties of Charlotte and St. John, New Brunswick, and since December 15th on that part of the coast of Nova Scotia from Vermont county to Halifax harbor.

The total pack of lobsters to the end of December was 1,663 cases, while 2,723 cwts. were shipped fresh in shell to market. During the corresponding period last year the pack was 1,192 cases, while 3,456 cwts. were shipped in shell. For the same period in 1915 the pack was 4,006 cases and the shipment in shell 16,174 cwts. While fluctuations in the catch from year to year are due, in a great measure, to weather conditions, it should seem from the returns that lobsters are not so abundant as formerly in these waters.

With diminished landings and an ever increasing demand the price per cwt. paid to fishermen is much greater than that of December last year. For example the price of cod is higher by 17 per cent., haddock by 30 per cent., hake and pollock by 60 per cent., herring by 120 per cent., halibut by 100 per cent. and smelts by 28 per cent.

The total value of all sea fish at the point of landing in Canada during the month was \$981,306 against \$803,505 for the same month last year.

Two fishermen were drowned in the course of the month. One belonged to Lunenburg county and the other to Digby county, Nova Scotia.

JOINS FISH COMMITTEE.

Mr. H. B. Short, manager of the Maritime Fish Corporation, Digby, N.S., director of the Canadian Fisheries Association for Nova Scotia and formerly member of the Fisheries Advisory Board, has been invited by Hon. W. J. Hanna to act as a member of the Fish Committee of the Food Control. Mr. Short spent the week of January 7th in Ottawa with the Committee, and will in future give time and attention to all matters connected with the fisheries of the Maritime Provinces. Information regarding licenses, etc., can be had from Mr. Short's office at Digby, N.S.

Science and the Fisheries

By A. BROOKER KLUGH.

Science is now coming into its own, and the importance of biology as well as chemistry and physics is becoming universally recognized. But a comparatively few years ago biology was regarded by the public at large as a hobby, harmless perhaps, but useless.

The old type of the professor of biology, short-sighted, absent-minded, and always represented with an insect-net in his hands and engaged in the pursuit of rare butterflies with unpronounceable names is perfectly familiar to all of us. He still persists in comic opera and novels; in real life he has disappeared. In fact, it is not entirely correct to say that he has disappeared, for he never existed in the exact form in which he is portrayed. The character which has been given to him was merely that side which was visible to the public, for these men of the old school accomplished much in the way of sound scientific work, in laying the foundations upon which we build to-day. The more we read of the history of biological science the more we realize that these men succeeded in doing a tremendous amount of valuable work with the very limited means of investigation at their command.

Science is often divided into two broad groups—pure science and applied science. The value of applied science is now generally recognized, but pure science, even to-day, is not seen in its true light by the general public. Pure science is concerned with the investigation of natural phenomena of all kinds, no matter whether it has any bearing on practical problems or not. In the public eye such investigations are mere play, a waste of time and materials which might be better employed in some practical way. But there is this very important truth which needs to be driven home—pure science is the foundation upon which applied science rests. The pure science of to-day is the applied science of to-morrow. The telephone aniline dyes, the photographic plate, the artificial hatching of fish-eggs, to mention only one or two examples, were once only little laboratory experiments—mere play. Was the time spent in this “play” wasted?

Now to consider the relation of pure science to the fisheries. Many people are inclined to question the value of such investigations as the ascertaining of the temperatures, both surface and deep, of areas of the sea, of differences in specific gravity or salinity of these areas, and of the making of a biological survey of the ocean. By a biological survey we mean the collecting by dredge, and tangle and tow-net of all the forms of life which occur in the ocean, naming and classifying them, ascertaining their abundance, their distribution, also their food and the animals which in turn feed upon them. Such work is pure science, it has no immediate practical value. But the point which we must keep constantly in mind is that such work may, and does, yield results which are often of direct application in the solving of some practical problem. We are not in a position to deal effectively with an animal, say a fish or a lobster, until we know thoroughly the conditions under which it thrives best, until we know its food (and even the organisms upon which its “food” lives) its enemies, and its time and manner of reproduction. These essential facts are all furnished by pure science.

And just here it is necessary to say a word in regard to what the public seems to expect when a practical problem is handed over to a scientist. They seem to expect that he will look wise for a moment or so, wave a magic wand, and say, “There! Your problem is solved.” If the supply of lobsters is running out a biologist is called in and if within a few weeks, or months at the outmost, he does not say “There are your lobsters,” the public is disappointed. The fact that there is nearly always a tremendous amount of foundation work to be put in, that there are many careful experiments to be made, and that these things take time as well as knowledge, is lost sight of. Only those who have been engaged in some phase of applied science realize the tremendous difficulties which have to be surmounted.

Now let us turn to a consideration of what has been, and what is being, accomplished in Canada in practical fishery problems.

One of the most direct and far-reaching lines of investigation is the work on fish-scales. As a rule, in the public estimation, fish-scales are more of a nuisance than anything else—something to be got rid of. But it has been found out that the scales of fishes yield to the biologist information of the utmost practical importance. It has been found that the scale bears concentric rings, that those rings of growth, formed during the summer, are wider apart than those formed during the winter, and thus when examined under the microscope the number of “winter checks,” (as the concentric areas of close lines are called), can be counted and the age of the fish thus ascertained. The great importance of thus being able to tell the age of a fish is at once apparent, but this work has a far wider application than is at first recognized.

In this report on the life-history of the Sockeye Dr. C. H. Gilbert says: “When they approach the shore at maturity and the spawning run is levied on for economic uses, it is found to be made up of individuals not all of the same age, as was formerly believed, but of three different age, constituting three distinct age-groups. Thus the Fraser River run of 1912 contained some individuals laid down as eggs in 1907, others in 1908 and still others in 1909. Similarly, in the run of 1913 were found those dating from the seasons of 1908, 1909 and 1910. Three successive years, therefore, though in widely differing degree, contribute their quota to each spawning run, and thus aid somewhat in keeping the runs uniform. For if adverse conditions bring about a great diminished hatch in any given year, the few offspring of that year will be joined at maturity by two other groups, from years which may have been normal or exceptionally good.

“Nothing certain was known concerning these age-groups and the very important part they play in the economy of the runs, until we had demonstrated by an investigation of the scales that it was feasible to determine the age of any individual by the records therein contained of the annual periods of growth.”

But the matter in regard to the Sockeye does not rest here. Dr. Gilbert has been able to show that the percentages of the various age-groups differ in the different streams in which the eggs are hatched and in this way has established the “parent stream

theory." This theory, which has now been proved, is that the mature fish return to spawn in the same stream in which they were hatched. This is a most important fact, as it is now apparent that in order to stock a certain tributary is it necessary to hatch out the fry on that stream, and conversely that it is useless to hatch out immense numbers of fry at some point and expect them to restock some other stream.

Investigations into the life history as revealed by the scale-structure are now under way in Canadian waters on the Atlantic Herring, Pacific Herring, Spring Salmon, Coho, Haddock, and Cod.

That the Halibut of the Pacific Coast is being depleted is well known to all who take any interest in our fisheries. The conservation of this splendid food fish is a matter of the very greatest economic importance. Mr. W. F. Thompson was called upon to investigate the Halibut problem and to advise methods of conservation. In beginning his investigation he found, as is so often the case, that facts in regard to the life-history of the Halibut were extremely meagre. During the past two years he has, however, been able to find out a good deal in regard to this fish, the reasons for its depletion, its slowness of growth, its lateness in coming to maturity, and so forth, and the results which he has obtained furnish at least some basis for recommendations in regard to its conservation. But as he himself says in his report much more information is necessary and he is still engaged in trying to acquire that information.

No one needs to be told of the serious decrease in the supply of lobsters—a decrease so rapid and steady as to threaten the complete destruction of the industry. Because of the success which has attended the artificial hatching of fish eggs, hatcheries were established for lobster eggs. It was found that the little lobsters could be readily hatched out, and they were then placed in the sea. But the activities of the hatcheries made not the slightest difference in the diminution of the supply of lobsters and biologists were called upon. It was at once seen that the mere hatching of the eggs was only a waste of time and energy, that the lobster fry were entirely different in their habits from the fry of fishes, and that owing to their habit of swimming about at the surface for many days after they were hatched they became the prey of fishes. Thus hatching out the eggs and dumping the young lobsters into the sea was merely furnishing the fishes with choice tid-bits, and considering the cost of operating the hatcheries it would have been cheaper to have fed the fishes on chopped beefsteak.

From a careful study of the life-history of the lobster it was evident that the fry must be carried through their first three stages, that is through three moults, and must have reached the stage at which they seek the bottom and are thus able, at least to some extent, to avoid their enemies. This having been determined it might be thought that the problem was solved. Not so. The young lobsters seemed to develop more ways of dying before they reached the fourth stage than anyone had ever imagined possible. If the water in which they were kept was too warm—they died, if it was not thoroughly aerated—they suffocated, if it was too cold they did not moult soon enough and the growth of micro-organisms on their shells stopped their respiration and—they died, if they were not kept constantly in motion they settled in a heap in some corner and those underneath were smothered, if they were fed too much the food left over partially decomposed

and—they died, if they were not fed enough they ate one another. So in one way or another they succeeded in dying at such a rate that out of several hundred thousand young first stage lobsters perhaps three, perhaps none, reached the third stage.

The problem of increasing the supply of lobsters was handed over to Dr. A. P. Knight, of Queen's University. His early experiments were discouraging in the extreme, but he was not the man to give up, and he set off on an entirely different tack. After careful investigation he came to the conclusion that one very great factor in the decrease in the number of lobsters was the difficulty of mating—the difficult of meeting with a mate. "The mating of male and female lobsters is largely a matter of accident. . . . The fewer lobsters, therefore, and the wider the area over which they are distributed the less the chances are for mating and the fewer the numbers of berried lobsters."

Dr. Knight's experiments in keeping adult males and females together in a pound resulted in seventy per cent of the females bearing eggs, as against one-fifth of one per cent of the females with eggs taken in the open sea. If subsequent experiments conducted on a large scale are as satisfactory the lobster problem is solved.

Very valuable work has been done on the Canadian Oyster by Dr. Stafford, of McGill University, and his researches, in addition to clearing up many points in regard to the life history of the oyster have established a fact of the very greatest importance in oyster culture—that the free-swimming stage lasts for a month instead of from one to five days as had been previously supposed.

The utilization of fish waste—heads, entrails and non-marketable fish—is a problem of much economic significance. Mr. J. B. Feilding has been working on this problem, and has succeeded in turning the scrap from whitefish, lake trout and lake herring into stock-foods rich in protein. He has produced a cattle-meal concentrate of 75 per cent pure fish-meal, a hog-food, and a poultry-food in balanced ration form.

Those mentioned above are some of the results which have been attained by science in relation to the fisheries in Canada. There are other problems under investigation and of the results of these researches we shall hear more in the future.

SAVING IN THE HOTELS.

Much More Fish Being Used as Substitute for Meat.

Mr. F. W. Mossop, who has been visiting hotels and restaurants in Montreal in connection with the enforcement of the Food Controller's regulations has forwarded a report on his work. Mr. Mossop says that among the better class hotels and restaurants he has found a very marked variation in saving of beef, bacon and white flour. The manager of one of the largest hotels there says that he is using about ten per cent less beef and bacon and ten to fifteen per cent more fish. He is serving special war bread, which means considerable saving in white flour. The manager of another of the larger hotels states that his use of beef and bacon has been reduced by forty per cent, while thirty per cent more fish is being served. Special graham rolls are served at all meals as substitutes for white bread. The other better class hotels and restaurants report an average saving of about twenty-five per cent in beef and bacon, with a corresponding increase in the use of fish.

LIST OF SUBSCRIBERS TO HALIFAX RELIEF.

Montreal District:

D. Hutton Co.	\$100.00
Maritime Fish Corporation	100.00
W. R. Spooner	100.00
Leonard Fisheries, Ltd.	250.00
Hy. Gatehouse & Son	100.00
Stanford's, Limited	25.00
Jos. T. O'Connor	25.00
H. A. Letourneau	25.00
J. J. Harpell	25.00
M. Terdiman	10.00
F. W. Wallace	10.00
Potland Fish Co.	10.00
Jos. Turgeon	5.00
A. Charbonneau	5.00
Lalumiere & Beaudry	5.00
	<hr/> \$795.00

Toronto District:

F. T. Games Co.	\$100.00
White & Co.	100.00
J. Bowman & Co.	35.00
	<hr/> \$235.00

Winnipeg District:

W. J. Guest Fish Co., Ltd.	\$100.00
Northern Fish Co., Ltd.	100.00
Armstrong Independent Fisheries	100.00
	<hr/> \$300.00

Digby District:

Maritime Fish Corporation	\$50.00
J. E. Snow	5.00
D. Sproule	5.00
Nova Scotia Fish Co.	10.00
H. B. Short	20.00
H. Anderson	10.00
	<hr/> \$100.00

Prince Rupert District:

Canadian Fish & Cold Storage Co.	\$200.00
Royal Fish Co.	25.00
	<hr/> \$225.00

Ottawa District:

T. W. C. Binns	\$ 10.00
	<hr/> \$10.00

Maritime Fish Corporation and Employees:

Maritime Fish Corporation, Ltd.	\$100.00
H. F. Robinson	25.00
R. Cowie	5.00
J. J. Bancroft	2.00
Geo. T. Hendsbee	10.00
Capt. John McDonald	5.00
Capt. Geo. Walsh	5.00
Jas. McKay	3.00
Abraham George	1.00
Chas. DeCoste	1.00
Hezekiah Dort	1.00
Freeman Smith	2.00
John Jarvis	2.00
Jas. Keating	2.00
A. J. Goodger	5.00
Have Cohoon	5.00
S. Shrader	5.00
Geo. Jarvis	2.00
Frank Munroe	3.00
Harry Snow	3.00
Moses Richards	1.00
John Jarvis, Jr.	.50
Charlie Horne	1.50
Fred Rhynold	2.00
Roy Peart	1.00
Wilfrid Manuel	1.00
Wm. Pembroke	1.00
Hiram Horton	1.00
Annie Rhynold	1.00
Sadie Feltmate	.25
Goldie Feltmate	.25
Molly Snow	1.00
Hilda Greencorn	.50
Maggie Greencorn	1.00
Eliza Carrigan	1.00
Sarah Creamer	.50
Katie Dort	1.00
Cora Gurney	1.00

Rebecca Hearn	.50
Joseph Armsworth	3.00
Edgar Dort	1.00
Edward Tobin	5.00
Nat Gosbee	1.00
Mary A. Carter	.50
Brittle Feltmate	.25
Jane Rhynold	1.00
Jane Dort	1.00
Albert Williams	1.00
Leslie Ehler	1.00
Covert Euloth	1.00
Chas. Jamieson	1.00
Leo Avery	.50
Ezekiel Snow	1.00
Jas. Sceales	1.00
Martin Fultz	1.00
Mike Carter	1.00
Henry Greencorn	1.00
Louis Ehler	1.00
John Williams	1.00
John Carey	1.00
Edward Boudrout	.50
	<hr/> \$229.75

Boats:

Capt. Thos. Hearn & Crew	\$ 15.00
Capt. Frank Lohnes and Crew	25.00
Capt. J. Manuel and Crew	15.00
Capt. Alonzo Feltmate and Crew	15.00
Capt. George Ryan and Crew	15.00
	<hr/> \$85.00

Steam Trawler "Rayondor" and Crew:

"Rayondor"	\$150.00
Capt. Knudsen	100.00
G. Hallen	10.00
W. P. Hansen	10.00
O. Carlson	10.00
Jacob Olesen	10.00
Anton Ericson	10.00
S. Anderson	15.00
Chris. Anderson	5.00
Jas. Gower	2.00
E. Jensen	5.00
Edgar Soper	2.00
H. M. Grayson	1.00
Stephen Power	2.00
Robert Morgan	2.00
Albert Morse	1.00
Joseph Thompson	10.00
Elisha Carter	2.00
Howard Goodwin	2.00
J. Skold	5.00
J. Kramp	5.00
	<hr/> \$359.00
	<hr/> \$673.75

The Robinson Glue Co., Ltd., and Employees:

The Robinson Glue Co., Ltd.	\$ 50.00
F. Robinson	5.00
Howard Myers	1.00
Saul Snow	1.00
Gerald Fanning	1.00
Chester Greencorn	1.00
John Carter	1.00
Pat Dollard	1.00
Walter Dollard	1.00
Harry Fanning	1.00
Mike Boudreau	1.00
	<hr/> \$64.00
	<hr/> \$737.75

A. W. Fader and Employees:

A. W. Fader	\$100.00
Everard Kelley	5.00
William Keefe	5.00
Fresns Le William	5.00
John Kavanagh	4.00
Elias Armsworth	3.00
Wilfrid Bouchle	3.00
Chas. Bouchle	2.00
Felix Gurney	2.00
John Fultz	2.00
John Rhynold	2.00
Robert Smith	1.25
Angus Munroe	1.00
Stanley Peirine	2.00
	<hr/> \$137.25

Fishermen:

Capt. Chas. Mosher and Crew	\$ 15.00
Capt. Frank Hawes and Crew	10.00
Capt. Samuel Mason and Crew	15.00
Capt. John Boudreau and Crew	10.00
Capt. Geo. Harnish and Crew	10.00
Capt. David Walsh and Crew	5.00
Capt. Geo. Smith and Crew	5.00
	<hr/> \$75.00

Port Felix:

Capt. Thos. Boudreau and Crew	\$ 15.00
Capt. Wm. Pelrine and Crew	5.00
Capt. Hubert Doroin and Crew	7.00
Capt. Wm. Uloth and Crew	5.00
	<hr/> \$32.00
Fred David and Employees	\$ 20.00
	<hr/> \$20.00
	<hr/> \$264.25

Portland Packing Co. and Employees:

Portland Packing Co.	\$100.00
P. T. Smith	5.00
A. J. Keary	3.00
Jeff. Boudreau	2.00
Chas. Dort	2.00
Mike Rice	2.00
Claude Rhynold	1.00
Harold Horton	1.00
Albert Dort	1.00
Duffield Boudreau	1.00
Matthew Armsworthy	1.00
Wm. Snow	.50
Wm. Boyd	.50
Edgar Boyd	.50
Geo. O'Brien	1.00
Louis Snow	.50
Howard Bond	.50
	<hr/> \$122.50

Boats:

J. R. Lumsden and Crew	\$15.00
S. Hurst and Crew	5.00
Angus Munro and Crew	5.00
S. Baras and Crew	3.00
	<hr/> \$28.00
	<hr/> \$150.50

Whitehead, N.S.:

J. S. Wells, Ltd.	\$ 16.00
Victoria Wells	1.00
Wm. Wells	1.00
Samuel Duncan	.50
Malcolm Duncan	.75
Mrs. Thos. Feltmate	.50
Levi McDuff	.25
John Dort	1.00
John Whalen	1.00
Thurlow Munroe	1.50
Samuel Porter	1.00
Sydney Grover	1.00
Joseph Uloth	.25
Sydney Grover, Jr.	1.00
Mrs. Chas. Duncan	.50
Mrs. Jas. Duncan	1.00
Wm. Feltmate	.50
David Duncan	1.00
A. Friend	.50
Mrs. John Grover	.50
A. Sufferer	.25
Joe Grover	.50
J. W. Roberts	1.00
Ruffus McKenzie	.50
Thos. Feltmate	.50
Thos. Grover	.50
Ernest Grover	1.00
W. S. Harris	5.00
Samuel Casey	.25
Clifford Haynes	1.00
John Fitzgerald	1.00
A. E. Dillon	.50
Howard McMillan	.50
Edward Conway	.75
Jas. Conway	.50
Jas. Grover	.50
Valentine McDonald	.50
Duncan McDonald	.50
E. H. Munroe	.50
Matthew McDonald	.50

Wesley Munroe	.50
Louden Munroe	1.00
Martha Feltmate	.50
Bertha Feltmate	.50
Harvey Munroe	.50
	<hr/> \$50.00

Summary:

Maritime Fish Corporation, Ltd.	\$673.75
The Robinson Glue Co., Ltd.	84.00
A. W. Fader	284.25
Portland Packing Co.	150.50
White Head	50.00
R. Hendsbee	10.00

HOW LIEUT. D. N. MCINTYRE DIED ON THE FIELD OF HONOR.

Particulars of how Lieut. Douglas Neil McIntyre, Deputy Commissioner of Fisheries, gave his life for his country are contained in a letter received from Capt. J. Gordon Smith. He writes:

"I know it must have been a great shock to you — as it was to me — to hear that poor old Neil McIntyre had paid the price, and that his fine life had been added to the great toll being paid that men may be free. I was with some of the comrades of his old battalion—who really adored him—to-day. They told me the particulars of his death. He was with his platoon in the line during some of the recent heavy fighting in Belgium. They were holding a front line trench and the Boches were putting down a heavy artillery fire on it. They had to stand in their shallow trench and take it. Neil was hit by a 5.9-inch shell and instantly killed. The only little gleam in the sadness of it all was that he didn't suffer.

"His comrades buried him at night in a little cemetery about a thousand yards back of the trench in which he died. He was to have gone on leave to England a few days later; in fact, his leave warrant came the day he was killed. So our good friend and splendid gentleman is gone. It would do your heart good to hear the way in which all ranks in his battalion speak of him — which shows that he was a splendid soldier, as he was. Everyone who knew him tells of what a fine officer and fine gentleman he was."

MARINE ENGINES FOR EXPORT.

Canadian manufacturers of marine engines will find in the fishing industry of Eastern Siberia a growing market for after-the-war export trade.

The development of the fishing industry of Eastern Siberia has led to an increased use of motor-propelled boats, while sailing vessels with auxiliary motor power have proved to be the best suited for the trade along the coast where the population is very scattered. Motor-boats are also beginning to be used to a greater extent on the principal rivers of Siberia for purposes of communication and in connection with the fisheries. Motors of Swedish manufacture are chiefly to be seen, but it is reported that the sales of American motors are increasing in Eastern Siberia, where the conditions of competition are more favorable to Canadian and United States manufacturers. Kerosene is the principal fuel used, gasoline being too dear for general use. The type of marine motor required in Siberia is one of strong construction and simple design. All sizes are in demand varying according to the purposes for which the motors are to be used. The names of some of the principal dealers in Vladivostok may be obtained on application to the Department of Trade and Commerce, Ottawa.

ALL CANADIAN WHOLESALE FISH DEALERS MUST TAKE OUT LICENSE.

Advices from the Food Controller's Office call attention to the fact that on and after January 1st, 1918, all wholesale dealers in fish of all kinds, whether home trade or export, are required to secure licenses from the Food Controller. Due publicity has been given the order, and after January 20th, the Customs authorities will have instructions to detain fish shipments from unlicensed dealers.

The only persons exempt from licensing are bona-fide fishermen and retailers. Traders, producers, commission agents, wholesale distributors, and all persons handling fish in a wholesale manner, whether fresh, frozen, salt, dried, cured, smoked, or canned—including salmon and lobsters—must be licensed.

Prosecution will follow failure to comply with the law, and the CANADIAN FISHERMAN advises all dealers to apply at once to the License Bureau, Food Controller's Office, Ottawa, Ont.

FISH ITEMS.

The U. S. Bureau of Fisheries desires to get in touch with all persons who can supply raw shark hides, as tanners report a growing demand for shark leather.

Canned whale meat has been tried by consumers in the East and pronounced excellent. The fiber is rather coarse but tender, and the flavor pleasant, with no waste. Whale meat is being canned by the American Pacific Whaling Co., Bay City, Wash., and the Victoria Whaling Co., Victoria, British Columbia. The product is packed in 1-pound tins, with recipes for cooking.

Menhaden is a fish caught in quantities for fertilizer, but menhaden fishermen prefer the fresh fish to other varieties, and salt it down for home use in winter. Small quantities of menhaden included with miscellaneous shipments of fish to eastern cities usually find a market, the only complaint being that these fish are very bony—a general shortcoming of the herring family to which menhaden belong.

Greater cold-storage capacity is needed in the fish industry, according to investigators as many thousands of pounds of fresh fish go to waste for lack of freezer room. In explanation of increased retail prices for fish, it is said that fishing boats have been taken by both the American and Canadian Governments for war purposes, reducing the catching plant; that fish bait is scarce, such as herring and hake, which are now being shipped to England for food; that nets and twine are scarce and costly.

New England fishermen say that they now handle a skate as carefully as a trout, for, contrary to popular belief, there is a growing market for skates as sea food. In October last year New York City consumed 37,759 pounds of skates, valued, wholesale, at \$1,113.

CREDIT TO MR. HANNA.

For the Increased Consumption of Fish, Says Prof. Prince.

Professor E. E. Prince, Dominion Fish Commissioner, speaking before the May Court Club in Ottawa recently, gave the credit to Mr. Hanna for the fact that more fish is being sold in the Dominion to-day than ever before. Even so, the consumption could be easily trebled, he said.

He pointed out that the annual value of the fisheries in Canada to-day approximated \$40,000,000. The total annual catch reached nearly 1,140,000,000 pounds and would afford every man, woman and child 140 pounds per year. At present from 60 to 75 per cent of our fish are being exported to the United States. There was a great opening now for Canadians to handle and market fish so that adequate supplies might be procurable. More economical methods should be adopted to stop the present waste and to make fuller use of fish by-products.

Forty fish are thrown away for one that is used. Some of the most delicious varieties are treated with contempt simply because of unfortunate prejudice, due to their names. He laid particular emphasis on the herring supply which surpasses that of Britain or Norway, yet which is not drawn upon as it should be.

The general use of frozen fish was earnestly advocated by the commissioner, who said that scientific experiments had shown that frozen fish retained its freshness and remained in good condition for six months and, sometimes, even for a year. It was just as good as fresh fish for all practical purposes and frequently better.

MORE FISH FOR THE WEST.

Mr. G. Frank Beer, of the Food Controller's Office, Chairman of the Fish Committee, has returned from the West where he was making arrangements, in conjunction with Mr. J. D. McGregor, Western Representative of the Food Controller, for extensive fish-distribution at reasonable prices.

The western fisheries are now under the supervision of Mr. McGregor. Arrangements have been made by which co-operative farmers' associations will be supplied with carloads of fish at one cent advance per pound over the price paid to fishermen plus the cost of boxes and transportation. This means that an abundance of fish will be available for these associations at from 30 to 80 per cent lower cost than formerly. It is expected that a hundred carloads of fish will be ordered immediately under this arrangement and all dealers have been notified that Canadian requirements must receive first consideration.

One Winnipeg fish company has agreed to supply any quantity of fish to consumers in the country at the following prices, f.o.b. (no charge for boxes): Whitefish, 12½ cents; trout, 12½ cents; pickerel, 12½ cents; jackfish, 9 cents; tulibeas, 9 cents.

This will enable farmers to buy their supply of fish in Winnipeg at a much lower figure than the former ruling price.



Sea Fishes of the North Atlantic

By HON. WILLIAM E. MEEHAN.

Former Commissioner of Fisheries of the Commonwealth of Pennsylvania—Superintendent of the Public Aquarium, Philadelphia—Author of *Fresh Water Fish Culture in Ponds and Inland Waters*—History of Fish, Fishing and Fisheries of Pennsylvania—In Arctic Seas, Part 2—The Battle of the Fishes, Etc.

Author's Note. — "Fishes Of the North Atlantic Coast" is not written for the ichthyologist or for a student in that science. It is for the one who goes fishing whether with nets or the rod, and for the one who likes to know something of the life he comes upon in the world. Hence scientific names and technical descriptions of fishes are omitted whenever possible in this work. As only sea fishes within a certain area and only those used for food or usually met with when fishing are written about, no attempt is made to present them in the regular family order as they would appear in works of ichthyology. The gaps due to many families of fresh water fishes not represented in the sea, and of sea fishes dwelling out of the area embraced in the work, are too many to render family sequence of any value.

W. E. MEEHAN.

INTRODUCTION.

Concerning Fishes of the Sea in General.

Fish populate all parts and probably all depths of the Oceans, but while representatives of most of the families are found everywhere therein, it is different with genera and species. These have divided themselves into distinct groups, in environment, suited to their structure and needs.

One of the groups is known as deep sea fish, and its members dwell at greater depths than one thousand feet. Another is called pelagic fish, because they roam the seas far from land. The third group is the shore fishes, which live in comparatively shallow water, and with few exceptions are those with which mankind is best acquainted.

The deeps of the ocean have always been a subject of great interest and speculation, undoubtedly because the unknown has a greater general attraction than the known. The shoal waters around all civilized lands have been well explored, and their flora and faunae described and exhibited.

Science has touched and groped the bottoms of the oceans at vast depths, but not thoroughly, owing to the difficulties and the limited area that can be covered by apparatus devised to date. Faunae has been

found by these explorations, but no vegetation, and it is believed that vegetation cannot exist below twelve hundred feet because of the absence of daylight. Beyond that depth is stygian darkness, excepting spots of faint light produced by the glow of myriads of phosphorescent life. The influence of the wind is not felt. There is no disturbance of the water—no motion, excepting that caused by the silent currents which flow in different directions over the floor of the ocean.

Besides the eternal night, stillness of the waters, and deathly silence of the abysmal depths, there is a stationary temperature just above the freezing point. To complete the awful conditions existing, from a human standpoint, at the bottom of the ocean, the water pressure at some places is five tons and more to the square inch, and at varying depths it is one ton to the square inch for each thousand fathoms.

No animal life existing on the earth, nor fish life near the surface of the water, could, in its present structure, withstand this tremendous pressure. They would be crushed into shapeless masses. Consequently all beliefs or thoughts that survivors of prehistoric monsters, at least in their original forms, dwell in the bottom of the ocean, may be dismissed as without foundation.

It naturally follows that a denizen of the deeps could not live under the conditions that exist near the surface. The two hundred known species of deep sea fishes have very light, porous bones, containing very little calcareous matter. Their structure is so frail that when one of them comes to the surface by chance, or is brought to the surface, it must be handled even more tenderly than the most fragile china, otherwise it will break into fragments.

There are other almost marvelous characteristics of deep sea fishes, some at variance with popular ideas of a necessary structure to withstand the tremendous water pressure. Not only are the bones soft, and the muscles thin and elastic, but the cellular tissue corresponds, and these characteristics vary in family and genera that dwell at different depths. Where there are eyes, they are usually abnormally large. Many of the deep sea fishes have no eyes, but instead, are furnished

ished with barbels or tentacles with which they feel their way about.

Fishes provided with eyes, even if large and capable of collecting many more times the amount of light than human eyes, would not be able to see much in the dark depths, consequently nature has furnished them with natural lighted lamps that they may take in, although dimly, their immediate surroundings.

The lamps are located either in the head, or near the eyes, or along the sides of the body. They are oval or elliptical lenses, pearl colored, and give out a phosphorescent glow. Nearly all deep sea fishes are furnished with phosphorescent lights of greater or less intensity. As the various strata of the deep sea teem with animal life from fish to animalculae, the silent sombreness of the water is speckled by glowing points of light, and broken by luminous clouds. It is the animalculae that furnish the cloud-like effects. They belong chiefly in the higher or mid strata, and are constantly falling in showers into lower where they become the prey of fishes.

As there is no vegetation, it naturally follows that all deep sea fishes are strictly carnivorous, and their rapacity is abnormal. Fortunately for them, they can gratify their appetite, no matter how great it happens to be, when opportunity offers, for most of them are provided with a stomach as elastic as a rubber ball. Thus one fish can easily swallow, another three or four times larger than itself.

An elastic stomach although both convenient and important, sometimes has a fatal drawback. A fish coming suddenly on another larger than itself, seizes and attempts to swallow it. The latter struggling to escape, forces both into the stratum of water above their natural habitat. Immediately the diminished pressure surrounding their bodies causes an expansion of gasses within, and both are swiftly shot upward until finally they reach the surface of the sea, dead or dying.

Among deep sea fishes, none are brilliant hued. Nearly all are either black or pearl colored. A few are a uniform pink; and it is said that albinos among black forms are not uncommon. Some species have crimson fin rays, or crimson tips on filaments, but this is the only dash of color. Deep sea fishes are as somber hued as their surroundings.

As temperature and other conditions in the deeps are the same, whether in the arctics or tropics, the range of species seems to be unlimited. The same species may be found in the Greenland Sea or the Indian Ocean, or any other huge body of great depth, into which the fish can find a way without getting much out of its proper stratum.

Not many of the deep sea fishes reach a great size. The greater number are medium or small; and because of this some of them are extremely hideous in appearance. In this respect no distorted vision of a man in delirium tremens can be more startling.

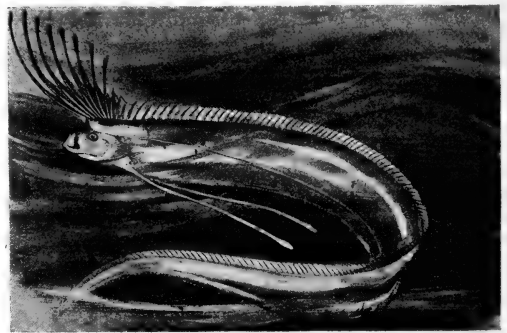
One of the very repulsive forms dwells on the bottom of the ocean between 5,000 and 10,000 feet below the surface. By contrast a Gila monster is a thing of beauty. *Melanocetus* is its name, and it belongs to a near surface group called Anglers. It is only four, or at most five inches long, and viewing its ferocious and murderous looking head and body, one cannot but be thankful that nature did not build the fish on a large scale.

The head of the *Melanocetus* is as large as the body when the stomach is not distended with food, and the whole front of the head is a cavernous mouth. Both

the upper and lower jaws are thickly lined by long incurving teeth, and the stomach is like the pouch of a pelican.

A lazy fish, the *Melanocetus*, instead of seeking its prey, beguiles it by means of a long filament tipped with scarlet, which is set on the top of its head and close to the lip of the upper jaw. Its method of enticing is that of the sportsman angler; but its mode of capture smacks of the pot fisherman. Burying its body in the sand with only its head exposed, the fish lowers its underjaw until it rests on the bottom, and waves its filament slowly in front of its cavernous mouth. Presently another inhabitant of the great depths comes along, and getting a glimpse of the filament rushes forward to seize it. In the rush, its head and part of the body enter the cavernous mouth of the *Melanocetus*. With a snap the jaws come together, and in a few moments the unfortunate fish, perhaps three or four times larger than the captor, is bent up uncomfortably within the latter's elastic, pouch-like stomach, and undergoing the process of digestion.

One of the largest in point of avoidupois, and the most formidable of the deep sea fishes, is the *Plagyodus ferox*. It grows to a length of six or more feet, and, it is believed, never rises higher than 1,800 below the surface. It is a long, almost eel-like fish, with a head



The Oar Fish—A Fish Often Taken for the Sea Serpent.

like a serpent. Its mouth is filled with sharp teeth, many of them longer than the others. These are so long and so sharply recurved as to be startlingly like the fangs of a venomous snake. The *Plagyodus* is one of the most rapacious of the deep sea fishes. It captures and stuffs until its rubber-like stomach is so distended that it appears as if a barrel is attached to its body. From the stomach of one specimen was taken several fair sized octopods, a number of crustaceans, and fifteen fishes of good size.

Among the most remarkable of the deep sea fishes, is the genus *Regalecus*, or Oar fishes. These harmless, weak, but ferocious looking creatures, have, under the guise of sea serpents, caused more popular excitement, and been the subject of more fanciful records in ships' logs, than any other fish. Creatures, existing and imaginary, have been hailed as the monster, but the Oar fish is the one which has the strongest basis of realism. It may therefore be pronounced the veritable sea serpent.

A mature Oar fish with its long, ribbon shaped body, horse-like head, and upstanding, flaming red, mane-

like front dorsal, of twenty-five or more feet in length, closely resembles some of the fabulous sea creatures described so enthusiastically by ancient travellers and writers, and might easily, at a distance, be taken for a huge and dangerous serpent.

Twenty-five feet and a weight of a little more than six hundred pounds seem to be the greatest authentic length and weight. A specimen of that size would be approximately twelve inches from the dorsal to the ventral line, and about two inches through the body. The body itself is jelly-like in appearance and is translucent. It is light blue with a silvery tinge, and has a number of dark, cross stripes irregularly placed on the sides. The snout is long and the forehead high, suggesting the head of a horse, a fancy strengthened by the high first dorsal, which consists of a number of flexible spines crowning the head. They are very high, curving forward and backward and each tipped with a red tuft. Attached to the rear of the first dorsal, is the second, eel like in appearance, and extending back to the tail.

The whole structure of the Oar fish is so fragile, that when one is shot to the surface through some unfortunate circumstance, it is difficult to secure it without its being broken into fragments. A specimen fastened to a board and exposed to the sun will soon evaporate and disappear.

Fishermen in Norway have a superstition that Oar fish always escort or accompany schools of herring, and because of this, they have named it the "King of Herring." The title is given recognition by ichthyologists in the generic name *Regalecus*, from the Latin of Rex, a king, and halec, a herring. Two species at least are known, *Regalecus glesne*, and *Regalecus Russellii*. The name Oar fish is bestowed because of the oar shaped ventral fins.

A majority of the deep sea fishes are degenerate descendants of both the shore and pelagic types. Their adventurous ancestors and their progeny travelled gradually into deeper water, and finding an abundance of food did not return. Their form and structure in time became changed to suit the new environments, until at length after the lapse of eons, the descendants became a type of their own.

Change of structure accompanied each advance, and both were necessarily gradual. From strong boned, tough muscled surface fish, they became frail, porous boned, degenerate, deep sea creatures.

It is among pelagic fishes that is found the greatest speed and the greatest powers of endurance. They roam the ocean far from land, and apparently can travel uninterruptedly for weeks, faster than the speediest steamships and seemingly without any desire or need for rest. Some confine themselves within certain temperatural limits, but others seem not to be so circumscribed, and they wander at will over wider water expanses, regardless of differences of warmth and cold.

A few of the pelagic fishes approach the shore annually for spawning purposes, but many perform this function in the open sea.

All pelagic fishes do not depend on speed and endurance when making their way about, although they possess both, but rely on other fish or objects for their means of locomotion. One of these is the Echeineis, or shark sucker, a long slender creature which fastens itself to the body of a shark by means of a cephalic disc on the head. In this manner it travels for days and weeks, only dropping from the body of its carrier

long enough to capture and eat sardines and other small fish which may come its way. They have no special affection for the object of their attachment, and will cut loose at the first intimation of danger.

Some of the largest, and some of the most ferocious fishes, are found among those classed as pelagic. One is the dread blue shark. It is a denizen of the warmer parts of the ocean and grows to a length of fifteen to twenty feet or more. The greater number of genera of the sharks is harmless or comparatively so, as far as man is concerned. There are but few that will, without hesitation, pursue human beings as an article of food. These few give an undeserved evil reputation to all. The blue shark is one of them. It is fond of anything in the shape of flesh, and a man seems to be a particularly delicate morsel.

The dolphin is a conspicuous and familiar pelagic fish. There is a cetacean which bears the same name, and better entitled to it than the dolphin, but it has become so firmly fixed in the popular mind that nothing can change it. Dolphins grow to a length of about six feet and travel in large schools. They seem to delight in accompanying and racing with vessels—the swifter the better.

Dolphin flesh is very palatable, and there is great sport in catching the fish with hook and line. Sailors have a superstition that sometimes the flesh is deadly poison, but fortunately they have a means of determining when it is deadly and when edible. When the fish is put on the fire to cook, a piece of silver is thrown in the pan or vessel, and if it turns black the flesh is poisonous, but if it remains untarnished it may be eaten with safety and enjoyment.

Many writers have attempted to describe the brilliancy of colors of the dolphin, and its rapid kaleidoscopic changes when the fish is dying, but all fall far short of the gorgeous reality. The iridescent tints and their rapid changes can be likened only to those of the aurora borealis as seen in its full glory at the Arctic Circle.

Another curious family of pelagic fishes, the Mola or head fish, is remarkable for great weight and grotesque form. One species, *Mola mola*, attains a weight of at least 1,200 pounds on a length of eight feet. It is nearly circular in outline, with huge but narrow wedge-shaped dorsal and anal fins set at the extreme posterior portion of the body, and a narrow semi-circular caudal. On account of the position of the dorsal and anal fins, and the narrow fringe like caudal, the fish appears to be all head, and to have had the remainder of the body severed. It is this peculiarity which has led to its popular name of Head Fish.

Sun fish is another common name for the Mola, but instead of a brilliant, iridescent, tinted scaled fish, like the active little fresh water creature of that name, it is covered with a rough, leathery skin. It is likewise very lazy and very fond of basking at the surface with its dorsal projecting above the water.

A close relative of the Mola is the Ranzania or the famous "King of the Mackerels." In some respects it is a more remarkable looking fish, as well as more beautiful in coloring. From a short distance, it appears as though the rear half had been bitten off, leaving the front half as a very graceful fish of a mackerel outline. The bitten off appearance is made more realistic by the dorsal and anal fins which, shaped the same as the Mola, are likewise placed at the extreme upper and lower edge of the posterior. The most beautiful and the most famous of the genus is *Ranzania makua*

of the Sandwich Islands in the Pacific Ocean. They are of a rich brown and silver color with numerous artistic, wave-like stripes, made up for the most part with darker spots on a field of silver. *Ranzania makua* is called by the Hawaiians the "King of the Mackerels." They believe that the mackerels all yield allegiance to the *Ranzania* as sovereign, and that if it be killed, they will all disappear from the neighborhood.

Of all the fishes of the open sea, the Deal fishes are the most singular. They grow to a length of only three or four feet, and their bodies are scarcely more than an inch thick. Were it not for a covering of a shiny, silvery pigment, the Deal fish would be strongly translucent, almost transparent. On its head there is a long streamer-like fin, instead of a mane like the Oar fish; and in the place of an ordinary caudal fin at the extremity of the tail, there is a long, narrow fin like a partly opened Japanese fan, which projects upward at right angles in the direction of the back bone. No other fish has this peculiarity.

Although vicious looking, the Deal fish is entirely harmless. Its teeth are small, and to quote Dr. Jordan, "It would not bite if it could." It is closely related to the Oar fish, and doubtless, partly on this account, such eminent ichthyologists as Gunther, Goode, and Bean, classed it as a true deep sea fish. Dr. Jordan, however, placed it among the open sea fishes, and as one that swims close to the surface. Like its cousin *Reguleus glesne*, the Deal fish is vested with sovereign rights by superstition. Indians of Puget Sound venerate it as "King of the Salmon." They declare that the runs and movements of the Salmon are governed by the will of the Deal fish, and if one be killed, the Salmon will immediately leave the locality.

Flying fishes belong to the pelagic group, together with pilot fishes, sword fishes, and a number of others, the names and characteristics of which are familiar through writers of marine subjects.

A majority of all species of sea water fishes, including those of brackish water, is among the shore fishes. Their habitat is almost exclusively in the neighborhood of land, and in comparatively shallow water.

Unlike deep sea fishes, and to some extent the pelagic fishes, those of the shore are arranged in zones suitable in water temperature, food supply, and the conformation of the adjacent land. Under favorable conditions, fishes in one zone, venture to a considerable extent into the zones of another, making it difficult to accurately define them. Roughly, the zones are six in number: The Arctic Ocean, the Temperate North Atlantic, Temperate North Pacific, Equatorial, South Temperate, and the Antarctic Ocean.

With the exception of the Arctic and Antarctic, the zones are sub-divided into a dozen or more, and the straying among those contiguous is so great, that the sub-divisions are but little more than name only. This is strikingly noticeable in the divisions of the North Temperate zone. When the water temperature is right genera belonging in the South Temperate venture far into the North Temperate, and vice versa. Genera belonging to the British have ventured across the Atlantic and established themselves permanently.

Most of the shore fishes are useful for food; some are of great value. Indeed, with the exception of the herring and one or two other pelagic fishes, the people of the North American Atlantic coast depend upon them for most of their fish food supply.

Some Characteristics of Fishes.

True fishes have a complete bony skeleton, scales, complete or rudimentary, at least seven fins, namely: one dorsal, one caudal, one anal, two ventrals and two pectorals, and gills with movable gill covers. They are cold-blooded or have blood approximately the same temperature as the water in which they live.

Sometimes, one or more of the seven fins are merged like those of the eel; and sometimes the scales are very small and deeply embedded in mucus, making them appear scaleless.

Sharks, rays, lung fishes and spook fishes lack one or more of the foregoing qualifications, and therefore are not true fishes, although generally described with them. The Lampreys lack nearly all the features, and are entitled to consideration in ichthyology only by their being apparently a connecting link between a lower form of animal life and the sharks and rays or near fishes and a connecting link between invertebrates and true bony fishes.

As a general rule the body of a fish consists of the head, or that portion from the nose to the back of the gills; the tail or fleshy portion from the vent to the caudal fin, and the trunk or the portion from the rear of the gills to the vent; and the fins.

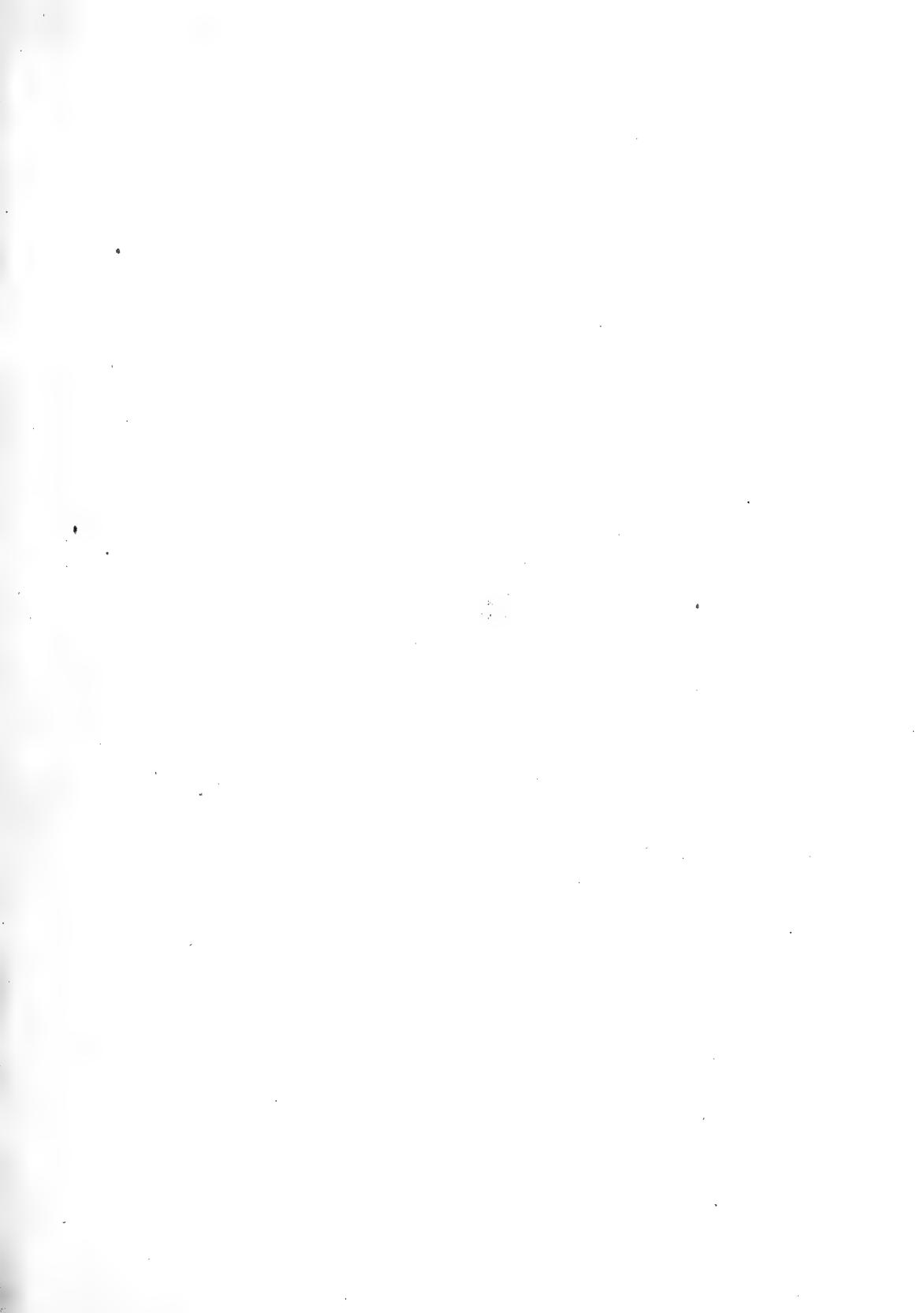
Many who are not students, erroneously apply the term "tail" to the caudal or membranous attachment of the tail. The divisions given are only the general rule and not fixed as is the case of all other vertebrates, because the variation and proportions are so unlike in different groups of fishes, that sometimes the lines are necessarily lengthened or shortened.

Fishes, with few exceptions, propel themselves by means of undulations of a portion of the trunk, the whole of the tail, and the caudal. The dorsal, anal, pectorals and ventrals are chiefly for balancing and steering, although the pectorals and ventrals, (which by the way are supposed to have been the precursors of arms and legs), assist slightly in imparting motion. The undulations which cause propulsion are plainly visible in the eel, and noticeable in all fishes having long tails.

Along each side of the body of every fish is at least one line, extending from the tail—and occasionally from the caudal—into the head, where it branches off into finer lines among the bones. Sometimes the lines are almost straight along the middle of the sides, and sometimes they are sharply curved upward almost to the base of the dorsal. Often they are very plain to the sight, but frequently they are indistinct and could be traced only with difficulty. They are known as lateral lines.

A microscopic examination of a lateral line shows that it is composed of perforated scales with ducts containing mucus. There is little doubt that one function of the lateral lines is to furnish much of the mucus or slime which covers the fish, without which it could not live any more than a human being could live without perspiration.

By many it is believed that the lateral line is also an organ relating to the sense of hearing. This is partly because the ear sac, located among the bones of the head, is connected with the lateral line. Others hold that the lateral line is also connected with the sense of feeling. There is nothing paradoxical in holding both views. The sense of hearing, if there is such a sense, which some doubt, is very defective in fishes





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compared with that of higher forms of animal life, and there is reason to believe that hearing and feeling are so intimately related as to be nearly the same sense.

No fish possesses external ears or ear drums, although there is a labyrinth including the vestibule, excepting in some of the lowest forms, and among some of the so-called fishes. The ear sac is often so located as to bring it in close connection with the air bladder, therefore many believe that the latter "may form part of the apparatus for hearing."

There is a reasonable certainty that fish depend more on the senses of feeling and vision than of hearing. According to some scientific men, and contrary to popular belief, "vision of fishes in general is probably not very precise." Dr. David Starr Jordan says: "They (fishes) apparently notice motion rather than outline, changes rather than objects, while the extreme curvature of the crystalline lens would seem to render them all nearsighted." Nevertheless it is undoubtedly a fact that notwithstanding the limitations with respect to outline and near-sightedness as held by eminent scientific men, there is in some fishes a remarkable keenness, and apparently a marvellous accuracy in distinction of color. It has been proven to the satisfaction of many anglers, that a brook trout can distinguish between shades of color of the body of artificial flies offered as lures.

Feeling is very highly developed. No matter how heavy or hard the scales may be, the slightest touch is felt. But the seats of greatest sensitiveness seem to be on the snout and the folds around the mouth. Accepting the idea that the lateral lines are a medium for the sense of feeling, then also certain other fishes are provided with an additional medium in the form of barbels which are slender and delicate appendages around the mouth. These are found chiefly on those that live on the bottom of streams and on those that dwell in muddy or very deep water, also on those that have eyesight admittedly more than ordinarily defective.

While the sense of feeling is highly developed, it is not in the direction of pain. This sense, if feeble, and in the mouth, is absent. The struggles and actions of a hooked fish are due to anger or fear, and not always to a feeling of pain. The fact that many hungry fishes will take the hook immediately after having the mouth badly torn, and that a trout will seize an eye torn from its head a few minutes before, is evidence that pain is feeble, although in some parts of the body it may be experienced. They have, nevertheless nearly all the nerves found in warm-blooded animals.

The sense of taste, according to the latest discoveries, is highly developed. Human beings have the sensation of taste in four substances, sweet, sour, bitter, and salt. Fish have the sense of taste of all excepting meat. While many fishes are without some of the appendages or membranes used for the sense of taste by warm-blooded animals, they have others and more. They not only have a sense of taste in the mouth and throat, but they have it externally along the lateral lines particularly on the tail. They have no sense of taste through smell, however, as have warm-blooded animals, for the nostrils do not communicate with the mouth.

Difference of opinion exist with respect to the sense of smell in fishes. Some contend it is feeble and others that it is strong and valuable and in the location of food. Experiments of Professor G. H. Parker, of Harvard, with dog fish and other fishes indicate strong-

ly the existence of a pronounced sense of smell and its importance to them in their search for food. Other experimenters in the same direction point to the considerable distance fish will travel to reach a "slick" of menhaden made by fishermen when chumming for blue and other fish.

Fish breathe by extracting air that has been absorbed by water, and not by extracting the oxygen that is one of the component parts of water. The fluid is taken through the mouth and ejected through the gill slits. As it passes through the slits, it flows over the gills, which are so thickly laced with blood veins that they are red. As it does so, the oxygen is extracted and absorbed by the impure blood there for the purpose. In most fishes the heart is located close to the gills and contains only one auricle and one ventricle. The impure blood in the body flows into the auricle and then into the ventricle, where it is forced to the gills and purified by the absorption of oxygen. After purification it passes direct to the arteries and from there to the veins throughout the body.

Some fishes require more oxygen than others, but none needs anything like the amount proportionately as man. The majority need so little that when taken out of the water they die in a few minutes from suffocation. Such are usually determined by large gill openings. Other fishes—and they are generally those which live in very muddy water—must have more oxygen than can be secured from the air in the water itself. These must come periodically to the surface and breathe undiluted atmosphere, otherwise they would suffocate. These are known as air breathers.

The majority of air breathers can live a long while out of water, sometimes for days. In such instances, the fish possess small gill openings, with close fitting gill covers, so that the gills may remain moist. Certain species, like the curious climbing perch (*Anabas scandens*), of India, have a specially constructed bronchial cavity in which there are laminated organs which it is believed assist in the oxygenation of the blood.

Broadly speaking, fishes as feeders may be divided into four classes: the purely carnivorous, or those which live exclusively on animal life; the semi-carnivorous, or those which live on both animal and vegetable matter; the vegetarians, or those which live exclusively on vegetable life; and earth feeders, or those living on mud that contains both animal and vegetable life.

The existence or absence of teeth does not determine the feeding group to which the fish belongs. Most fishes have teeth of some description, although there are several important groups that have none. Nevertheless, the pronouncedly carnivorous fishes usually have them, and often they are long and sharply recurved, capable of bending inward when prey is seized, and springing back into position after the food has passed on the way to the stomach.

Molars are generally found in fishes which live principally on crustaceans and shell fish. Purely vegetable feeders are apt to be without teeth or so short and closely set, as to give a rough, velvety surface. This last type, however, is also found among carnivorous and semi-carnivorous fishes. The chief function of teeth, excepting molars, is to seize and hold struggling or slippery food while being forced into the stomach from the head.

As stated before, the majority of fishes swallow their food immediately, and once in the stomach it is digested with wonderful rapidity. It is so rapid that a carnivor-

ous fish can, without serious trouble, seize and swallow by degrees another fish as large as itself. In such instances the tail and often a part of the trunk projects from the mouth, and remains so until the head and that part of the trunk in the stomach are dissolved by the powerful gastric juices, after which the remainder slips through the mouth and throat. An hour is generally ample for the whole process. A shore or pelagic fish can swallow another equal to its size, because the throat can be greatly distended. In some fishes, notably among deep sea groups, the stomach is capable of being abnormally distended, so that a fish three or four times the size of the captor may be disposed of promptly.

The Swallowers consist of a group of deep sea fishes which do not actually swallow their prey, but pull themselves over it by means of their long, sharp, recurved teeth and strong jaws. The members of this family have a stomach that can be distended like rubber, and one of these fishes has been known to engulf another twice as long as itself and twelve times its bulk.

While a majority swallow or engulf their food rapidly, there are many which dispose of it very slowly. Many of them are found among the vegetarians and semi-carnivorous, as for example, the carps and other members of the minnow family.

The gastric juices are so powerful that even metal—a hook for instance—will become disintegrated in a short time. There is good reason to believe that the complete disintegration of a hook in the stomach takes less than a month. It is this apparent fact that practically insures the life of a fish, if after swallowing a hook, the snood be cut and the fish liberated with wet hands and without bruising.

Most fishes are incapable of uttering sound, but there are many that can. Among the latter are the drums, and other members of the Croaker family; also the curious "musical" Dog's Tongue of Siam, which is a member of the Sole family; the strange Fiddler fish of Asia, and the catfishes. It is sometimes believed that some of these having the power to produce sound, only do so under the stress of terror or anger, but others, like the Drum, undoubtedly utter them as a sex call.

The manner in which the sounds are produced is not definitely settled, but there is reason for the belief, especially in the case of the Drum, that it is produced through the medium of the air bladder. Some aver that the sound is made by the clashing together of the pharyngeal teeth.

Generally the sound made by fishes is only a primitive grunt of varying intensity, according to the age or size of the fish; but in some instances it is claimed to be of an entirely different and more advanced type. This is notably said to be the case with the Dog's Tongue Sole of Siam. According to Sir J. Bowring, the fish "which sticks itself to the bottoms of boats, produces a sound something like that of a jew's harp struck slowly, though sometimes it increases in loudness so as to resemble the full tones and sound of an organ." The Fiddler of Asia, according to Dr. Day, makes a noise resembling the buzzing of a bee.

There can be no reasonable doubt that fishes sleep at other periods than that of hibernation, although having no eyelids, they cannot close their eyes. Sleep is irregular both as to interval and duration. The sleep of fishes in captivity is easily determinable by the experienced person, but to the inexperienced it is mistaken for death in many instances.

In cat-fishes the close resemblance of sleep to death is very striking. In nearly every one of the many instances coming under the writer's observation, the fish either rested entirely or partly on its side, or obliquely with its tail on the bottom. The gill covers were tightly closed, and the motion of the gills almost imperceptible. Sometimes the lower jaw relaxed slowly until the mouth opened wide exactly the same as often happens to a sleeping man and as with man, the fish suddenly closed its mouth, but the jaw again relaxed and it slept with its mouth open. Were it not for the healthy, burnished appearance of the body, the erect dorsal, the occasional opening and closing of the mouth, and once in a while a slight twitch of the eye, the fish might easily be supposed to be dead or dying.

Species cannot be determined by the ground color shades for they vary according to food, environment, or both. A fish living in gloomy places will be a much darker color than one dwelling in the full strength of sunlight. If a fish changes from one environment to another, the color changes to conform. Foods have a marked effect on color, both of flesh and covering. Many Crustaceans as crabs and shrimps, will impart a salmon hue to the flesh, and a very brilliant tone to the covering of the body. Dark pigmented foods will darken the color of the fish, sometimes even taking out the color of spots.

Color fades from fear, sickness and death. Sometimes in the case of the first two, the changes from brilliancy to dullness is gradual, but in others it is almost instantaneous. A remarkable example of quick change is found among the family of groupers—denizens of southern waters. With these even the spots almost disappear. Inside of a minute a grouper will change from a thickly spotted reddish brown fish, to a nearly plain gray.

A fear-stricken fresh water Small Mouth Bass in captivity, will change from a brilliant bronze to a dull yellowish brown in a few hours. Sick fishes lose the sheen of health and become pale and dull. Healthy fish, caught and taken from the water, frequently have their colors augmented, and with kaleidoscopic changes, during the dying moments. The Dolphin is a fine example of this fact. It is only after death that the colors fade. Colors, particularly with the male, become much brighter in the breeding season.

Coloration of fishes in general is usually protective in its design. Deep sea fishes are mostly sombre hued; pelagic fishes are blue, or of bluish type, with metallic lustre; fresh water fishes almost invariably have as their ground colors, grey, brown, olive green or silvery. Brilliant colored fish predominate in tropical and semi-tropical waters; while the shore fishes of the North temperate zone have a ground coloration of black, brown, reddish brown, silvery shades of blue, and many with bright metallic lustre.

Bottom fishes, as soles and flounders, are usually olivaceous, with darker streaks and blotches, so as to give a color resemblance to the bottom and surrounding vegetation. As a further protective measure, the majority of all fishes have dark green or olive hued backs, plain or mottled, and white bellies. These colors on the back, render the fish indistinct to enemies above looking down, and the white underneath, shading with the atmospheric light, makes them less visible to enemies beneath.

While ground coloration cannot be invariably accepted in the determination of species, certain color mark-

ings, known as "recognition marks" may, with some reservations. Among these, to quote Messrs. Jordan and Everman, are: "Ocelli, black or blue, ringed with white or yellow, on various parts of the body; black spots on the dorsal fin; black spots below or behind the eye; black, red, blue, or yellow spots variously placed; cross-bars of red or black or green, with or without pale edges; a blood-red fin or a fin of shining blue among pale ones; a white edge to the tail; a yellow, blue, or red streamer to the dorsal fin; a black tip to the pectoral or ventral; a hidden spot of emerald in the mouth or in the axil; an almost endless variety of sharply defined markings, not directly protective, which serve as recognition marks, if not to the fish itself, certainly to the naturalist who studies it."

The reservations referred to with respect to the foregoing are, that in many instances, some of the markings change color or wholly disappear when the fish reaches a certain age, or may temporarily fade under varied food conditions; for examples, the parr marks, or vertical bands on the young of the salmon family, almost wholly fade at maturity, and the red spots on the charr disappear when it feeds almost exclusively on some unnatural foods; the bars on the black drum vanish when it reaches maturity; and sometimes, but rarely, fishes will lose not only their ground color, but all color markings and become albinos.

When considering the reproductive processes, fishes are divided into two classes—oviparous, or egg-producing, and ovoviviparous or viviparous, or live bearing. The first embraces most of the fishes; the second a very small number of the families, including some of the so called or near fishes as sharks and rays.

Eggs of oviparous fishes are fertilized by the male after they have been extruded by the female, and are hatched in the water. Eggs of ovoviviparous, or more commonly viviparous fishes are fertilized and hatched within the body of the female, and the young issue fully formed.

As a rule those of neither division possess external genital organs. Such organs as exist are within the body and very primitive. They consist chiefly of a pair of ovaries or roe, for the female, and a pair of testes or milt, for the male.

In the case of egg producing fishes, the milt is discharged through the vent into the water, and from there the germ cells seek and fertilize the eggs expressed a few seconds before by the female. Only one germ-cell can enter an egg, and this by way of the micropyle—a minute opening at the upper pole. In view of the fact that fertilization with this class of fishes is external, it seems inexplicable that the life of the germ-cells in water is brief, not more than three minutes, generally less than a minute and a half.

Rarely, the male of a species possesses a rudimentary external organ in the form of either a small fleshy projection of papilla, or a tube, sometimes temporary in character and sometimes permanent. But the majority of viviparous fishes convey the milt into the ovary by means of cartilaginous attachments to the ventral fin. The eggs of viviparous fishes are hatched either in the ovary or in a dilated part of the oviduct, which in such an instance bears a resemblance to a real uterus.

Eggs of fish vary in size according to species and the age of the parent. The ova of a trout five years old are appreciably larger than ones spawning for the first time. The period of hatching varies greatly according to families. The eggs of some fishes are hatched in about two

days, those of others require as many as four months.

Water temperature has a marked effect on the period of incubation. It is lengthened by colder water and shortened by warmer. As an illustration of the strong influence that temperature has, at 34 degrees F., it takes about 120 days for brook trout eggs to hatch; at 46 degrees it is 60 days, and at 52 degrees they hatch in 45 days.

A fish's egg is a perfect sphere in shape. In the upper pole there is a minute hole called a micropyle, surrounded by a glutinous rim. Water enters the micropyle along with the germ-cell and swells it, until the micropyle is closed and sealed by the glutinous rim.

The shell of the egg is membranous, and in most species is translucent. Hence the different stages of development of the embryo are open to study through the human eye. This glimpse, which Nature allows into one of her greatest and most wonderful mysteries, apparently demonstrates that the transition, in fish at least, from latent to active life is instantaneous and not gradual.

With different species, the specific gravity of eggs varies greatly. Some are heavy and hold to the bottom as firmly as pebbles; others are semi-bouyant; while others—and this is general among pelagic fishes—float on the surface. A small drop of oil beneath the upper pole is what gives most eggs their buoyancy.

Methods of disposal and care of eggs vary greatly among oviparous fishes. Some build nests, deposit the eggs loosely thereon, and care for them and the young for shorter or longer periods; others have their ova connected by gelatinous substances, and fasten them to submerged vegetation; others have separate but adhesive eggs which are dropped and become glued to vegetation and other under-water substances. Some attach the eggs to their bellies, after fertilization, or carry them in abdominal pouches; and others carry them in their mouths.

Among nest building fishes it is the male, usually, that constructs the nest and cares for the young, although occasionally the female joins in the latter duty.

Maturity varies as widely as the methods of reproduction. Some reach the period in one year; others in two, more in three, and some are four years in reaching spawning age. There is reason to believe that in rare instances the period is even much longer. The majority of fishes survive repeated spawnings, but all the fishes of some species die after their first deposit of eggs.

Superficially there is tremendous waste in the reproductive processes of fishes. Annually the number of eggs and young from the females is so prodigious that if all the first were to hatch and the young mature, in a few years neither the seas nor the fresh water could contain them.

Very few egg-producing fishes furnish less than a thousand ova at a spawning; those that give fifty to one thousand are common; and some, like the eel, yield millions. But as a rule, only a small percentage of the eggs hatch, and a still smaller percentage of the young reaches maturity. It has been estimated that in the case of many species the surviving percentage is less than two per cent. Nature designed the surplus of fish eggs and fish as food for fish, and that there should be only enough survivors to maintain the species from extinction, with perhaps a slight increase.

Movement in fishes is as diverse as many of their other characteristics. Some are pronouncedly nomadic,

moving from place to place, apparently without definite purpose except to follow foods or leave changing temperatures. Others seldom leave a chosen place throughout their lives, unless compelled by unfavorable surroundings. In both classes fishes are found that are gregarious and solitary in their habits.

Another group is strongly migratory, journeying from one definite place to another and back again about the same time annually. Migration is usually connected with the reproductive instinct, and it may be from one locality in salt water to another; or from salt water into fresh, or from fresh water into salt. Those which migrate into fresh water are called anadromous fishes, and those entering salt water are termed catadromous. It is among these two that are found species of which either all or a large percentage die after spawning once. Herring, shad, salmon and several other of our most valuable food fishes are among the true migratory fishes.

A few species of fishes are inedible or downright poisonous, but the great majority is excellent and healthy food. In fact it is, in many respects the most important at the command of man. The prosperity of some nations depends largely on their fisheries. International disputes, and even wars, have been founded over fishery rights and control. Undisputed rights are jealously guarded by stringent laws.

Occasionally in past years, where, for some temporary cause local demand for fish food fell off, laws were made which compelled a restoration of the consumption to at least a normal amount. An instance is said to have occurred in England, in the reign of Queen Elizabeth, when the Privy Council ordained two fish days each week, during which it would be unlawful under a heavy money penalty, to sell or eat any flesh save that of fish.

Fishing, as a means of livelihood, is contemporaneous with human trade, although some ancient nations considered it an unpardonable sin to eat fish. It was a long while before people in the far east dared, or were allowed, to eat fish, because of a belief that the blood was unhealthy and a breeder of many dreaded diseases, among them leprosy. At length, according to tradition, Mahomet by the performance of a miracle caused fish to become healthful, and made it possible for them to be lawful food. He took a specially prepared knife, blessed it and threw it into the sea. By so doing, the throats of all the fish in the world were miraculously cut, and the unhealthy blood liberated without killing the fish. The wounds thus made by the knife never healed, and they are now known to skeptical moderns as the gill openings in the back of the head.

Ancient Greeks possessed no fear of bad effects from eating fish, but they did believe it to be unlucky to see a fish die. They got over this disaster by hiring people for whom bad luck had no further terrors, to kill fish in the markets, for customers. If superstition counts for anything, it is lucky to carry a fish scale in the pocket book. It is also lucky to carry the neck bone of a cavalle in the pocket. A very pretty superstition, and one which displays a knowledge of human nature, is held by gypsies. If a girl wishes to see the form of her future husband and also what luck she will have in her married life, she goes to a cross-road on St. George's night, bearing with her a plate of fried fish and a glass of brandy. Seating herself on the ground, she places the articles named in front of her and waits. Presently the form of her intended husband confronts her. If he takes up the platter of fish, the married life of the

girl will be happy. If he picks up the glass of brandy first, the wedded life will be wretched. If he takes neither, one of them at least will die within a year.

CHAPTER I.

Sharks, Skates and Rays.

Under the popular name of fishes is found a group called Sharks and Rays, members of a primitive form and structure when compared with bony fishes. Sharks, skates and rays are perhaps the most interesting among all the groups both from a scientific and speculative standpoint. Unquestionably they are one of the foundations on which the structure of Teleosts or true fishes rests, and there is reason to think, on account of the superior character of the heart which they possess, that in some remote time, their blood was warmer than now, and that Nature at first designed to develop the shark landward, but afterward changed her mind.

Sharks have a pedigree which dates back at least to the upper Silurian age, which precedes the Devonian, the period when fishes were predominant animal life. With the advent of the Carboniferous period there were not less than ten families with a numerous variety of forms. In a latter age, the Jurassic, all the Sharks excepting one family became extinct, and from that one family has radiated all the modern sharks. One species of the most ancient families has survived every age and remains practically unchanged in form; it is known as the Port Jackson Shark, an inhabitant of the waters around Australia. Several of its characteristics lead to the conviction that originally sharks were altogether bottom feeders, living principally on shell-fish, and that their present dependence on floating food was due to changed food conditions.

There are many radical differences between Sharks and Rays, and Teleosts or bony fishes. The greatest is the interior frame work. Sharks are without bony skeleton, and in most instances there is no calcined matter excepting in the vertebral segments. The vertebrae is notochordal, surrounded by segmented cartilage. The skull is also cartilaginous and of the simplest form, merely a box-like casing for the brain. Sharks are without scales; in their place are minute ossified projections enameled and closely set, giving a sand-papery feel when the hand is rubbed in one direction over the skin.

For greater effectiveness in their original character as bottom feeders, Sharks were given a vertebrated tail with an upward curve, and this peculiarity is found in the modern species.

Sharks vary in reproductive processes. Some deposit eggs and others are viviparous. In neither case are they solicitous parents, for they abandon their eggs or their young, as it may be, immediately after delivery. The viviparous sharks produce few young, but the percentage of loss is thought to be very small.

Spawn of egg bearing sharks is wonderfully protected from attacks of food hunters. The egg has a dark colored horny case of varying form, according to genera, with filaments attached to hold them to the kelp or other sea weed, among which they are deposited. Some are pillow-shaped or quadrate, with filaments at the corners, while others are spiral formed, with a pair of long twisted filaments at one end, like the fibre of a tree root. This last is not found along the Atlantic coast of North America, but is confined to the Pacific waters.

and belongs specifically to the Port Jackson shark.

According to the popular mind, all sharks are endowed with hideous ferocity and aggressive man-eating proclivities. Yet comparatively few deserve the dreadful reputation they possess, or warrant the terror they inspire. The few species of man-eating sharks which exist belong to warmer waters than ours, and the one or two species which are occasionally seen along our coast, are only stragglers, with the exception of the neighborhood of Florida. Those of the dangerous species which are found in that locality and occasionally stray a little further north, are the Man-eating sharks, the Tiger Shark and the Cub Shark. All the others are either harmless or generally likely to let man severely alone.

Many of the sharks are more or less truly pelagic in their character and therefore are visitors rather than residents. Some are very rare. Those found more or less frequently in the more northern waters are the basking shark, Mackerel shark, sand shark, thrasher shark, hammer head shark, dog shark, dusky shark, black-finned shark and smooth dog shark. Some of these are little known and seldom encountered. The largest and perhaps the most striking of the sharks in northern waters is the Basking Shark. It is a native of the near arctic and seldom found below northern New England. Under normal conditions it is very lethargic and seldom moves far from one place.

Few sharks attain as great a size as the Basking, which is thirty feet or more, and, like many other huge creatures, is harmless when not disturbed. Even when wounded the danger to man is not from deliberate attack, but from accidental blows of its powerful tail, while in excess of terror it is trying to escape. That it is not a man-eater shark is indicated by the teeth, which are small and weak. As a matter of fact the principal foods are believed to be jelly fishes, small fish, shrimps and other diminutive crustaceans. Moreover, the character

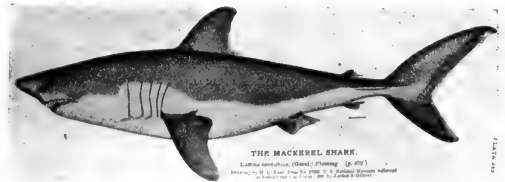
of the gill rakers suggests that the shark strains its food after the manner of certain species of whales. Yet, while indications point to its not being a man eater, at least once in its family career, if Bishop Gunner of Norway is correct, a Basking shark made itself famous by swallowing Jonah of Biblical fame, notwithstanding the Sacred Book credits a whale with having performed the miraculous act.

A Basking shark loves to rise sluggishly to the surface and bask there for hours in the sunlight, with its dorsal fin and nearly half its body out of water. Hence its name, Basking shark. It has other names. Off the coast of Ireland, where it is quite abundant, it is called sun fish, and in other places it is variously known as sail fish and homer, a corruption of Hoe-mother, another name.

Where it is abundant, fishermen pursue the basking shark for the sake of the rich oil which the liver con-

Mackerel Shark.

Although by no means numerous, the mackerel shark also as frequently called porbeagle, is found in North American waters between Newfoundland and Florida. It is this shark that is usually the innocent cause of frantic terror to bathers on the New Jersey coast, by swimming so close to the surface as to exhibit its fin above. That fin instantly furnishes a mental photograph of a huge man-preying beast, with a great mouth filled with glistening white teeth, anxious for a meal of human flesh. While, in comparison with some other species of sharks, the mackerel does not grow very large—seldom exceeding eight or ten feet—there is some excuse for the terror which its presence inspires in the mind of the uninstructed, for it is a fierce and formidable looking creature, closely resembling in outward form the justly dreaded man-eater. Its snout



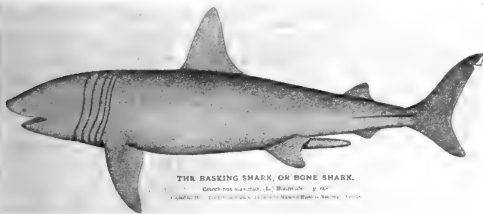
THE MACKEREL SHARK.
Larva, 1880, (Bull. U.S. Fish. Comm., Vol. 1, p. 100).
From the U.S. Fish. Comm. (Bull. U.S. Fish. Comm., Vol. 1, p. 100).

is prominent and sharply pointed, and its mouth is wide and armed with long, sharp lance-like teeth. But sharp and ugly though the teeth appear, they are evidently only for seizing and tearing, and not for cutting, as is typical with man-eaters.

The mackerel shark is very voracious in pursuit of food and is specially fond of mackerel. It is this special weakness that has brought on the creature the name of mackerel shark. This shark is so fond of mackerel that it will, when it meets with a school, forsake all else and cleave to it for days. Dashing into the midst of a mass of terror stricken fish it will seize one or more and often swallow them at once and whole so as to the sooner secure another mouthful.

While not abundant along the Atlantic coast of the United States and the Dominion of Canada, it is plentiful around that of Great Britain. Years ago it was regularly hunted for the liver, which contains a large amount of oil. Of late years, before the outbreak of the great World War, the pursuit of this shark was greatly diminished because, it was claimed, that the livers did not contain as much oil as they did formerly. It is a little difficult to understand, however, that if in the past a liver yielded, as claimed, four or five barrels of oil, why it should not do so now. The hide of the mackerel shark as well as all other species of larger sharks are capable of being tanned into a high grade leather, and it is understood that a ready market can be found at good prices for all that can be obtained.

Very little is known of the breeding habits of the mackerel shark, excepting that it is viviparous and that the number of young at a birth is small.



THE BASKING SHARK, OR BONE SHARK.
From the U.S. Fish. Comm. (Bull. U.S. Fish. Comm., Vol. 1, p. 100).
From the U.S. Fish. Comm. (Bull. U.S. Fish. Comm., Vol. 1, p. 100).

Sand Shark.

One shark of relatively large size found in considerable numbers in northern waters is the Sand Shark. The phrase "relatively large" is used because specimens measuring nine or ten feet long, and having a weight of about two hundred pounds have been caught. The average size, however, is only about six feet. It is a near relative of the fear inspiring mackerel shark, but is totally unlike it in its habits. Instead of pursuing a strenuous life chasing mackerel and other fish, swimming with speed close to the surface with fin out of water and scaring unsophisticated bathers half out of their senses, and like the ass in the lion's skin, ape the actions of a man-eating shark, as does the mackerel, it generally leads a sluggish life. As a rule it hugs the bottom closely and seldom rises to the surface, unless the water in which it happens to be is shallow.

As the usual haunts of the sand shark is on the bottom, and as it frequently approaches close to shore it is not uncommon for one or more of them to be unsuspected among bathers. Partly because of this secretive habit, while the sand shark is hardly likely and never has been positively known to attack man, yet if the truth were known there is more to dread from the sharp and nearly triangular teeth than from those of the mackerel or any other species of shark that makes more or less of a practice of visiting northern waters.

There is indeed a strong suspicion that at least one sand shark attacked and fatally injured five bathers along the coast of New Jersey in one week of the summer of 1916.

A young man was bathing in the surf at Beach Haven when he was seized by one leg by a shark about six feet long. He was reached with great difficulty, the shark clinging to its prey for some minutes. Two days later a swimmer in the ocean at Spring Lake was attacked in the same manner. Three days afterwards three more bathers were attacked within a few minutes of each other in Mattewan Creek, a stream flowing into the ocean near the northern limit of the State. Two of these three were injured in the same manner, that is to say by having the flesh torn from a leg. The other had his abdomen torn out. All five died from their injuries. All these casualties not only occurred in a little more than a week, but were within a distance of 130 miles.

Because of the peculiar nature of the wounds inflicted, that is to say, the flesh was in each case partly torn and not entirely cut from the body, the general conclusion was reached that the horrors were not committed by any stray members of the man-eating sharks of the south, but by one or more of the northern sharks whose teeth are made for tearing rather than cutting. As there were some evidences of cutting, such as might be done by the sand shark but not likely by the mackerel, suspicion finally rested on the former. As the area in which the attacks were made was only one hundred miles in length and all in less than ten days, and as no more were made afterward, another conclusion was reached, namely that the work was all done by one shark.

There is nothing remarkable in the assumption or the theory that a member of a species of shark not in the habit of attacking man should under certain conditions change its mode of life and feed on human flesh. It is a well settled fact that any kind of shark having once fed on human flesh acquires a taste for

it, and like a tiger under similar circumstances is thereafter an inveterate man-eater.

It may be assumed that while the young man at Beach Haven was bathing, he unwittingly bumped into a sand shark, and that in resentment it turned on him and seized the white flesh on the bare leg. Escaping after the rescue of the victim, the shark with a memory of the taste started on its quest of horror and attacked every bare human being it met until it was at last caught and killed.

Sand shark fishing is a favorite sport off the coast of New England. At times the creatures are so numerous that one fisherman may capture half a dozen or more in a single day. Since the dreadful attacks on bathers in 1916, shark fishing has become very popular along the New Jersey coast. The hooking, playing and capture of a sand shark yields exciting but not necessarily dangerous sport. It requires from half an hour to more than an hour to play out and gaff and boat a medium-sized specimen.

Many fishermen use hand lines in fishing for sand sharks, but rod fishermen are numerous. Occasionally a man is found who uses only an eight-nought or a nine-nought hook when after this fish, and that man has all the enjoyment it is possible to get out of angling. More use regular shark hooks fastened to a short chain. Only a stiff heavy rod is used and only a line that can stand a heavy and prolonged strain. The use of an ordinary sea fishing rod would mean a limited safety strain on rod, an almost interminable fight, unnecessary fatigue and painful muscles. A shark exhibits no tricks nor cunning when hooked such as does a game fish. From the time of its being hooked until it is gaffed there is no possibility of a shark escaping unless the line is severed by its sharp teeth, or by an extra exertion of its great strength it breaks the tackle. That is why few fishermen care to prolong the fight of a large Sand Shark, and why heavy tackle is preferred to that ordinarily used in sea fishing. When a shark is hooked there ensues a struggle which is one of the strength of man, assisted by a good strong rod, reel and line against the strength of a shark. The chances of victory are strongly in favor of the one having the greatest endurance. Usually the reel helps the man to that.

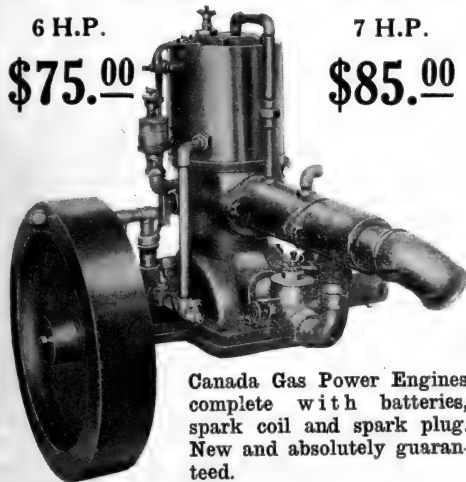
EATING FISH.

The highbrow scientists explain that fish builds up the human brain, and that is what we're needing; the brains are punk beneath our hats, and in our belfries many bats forevermore are speeding. Economists are saying now, that fish is better than a cow, it is the proper diet, if we would help the Allies' cause, and make the gory Teuton pause, in Europe's brutal riot. Come, let us fill ourselves with fish! It is the patriotic dish, and it will make us brainy; we'll grow so wise from eating trout, we'll know too much to venture out, when it is cold or rainy. Through all the brooks and ponds I search, for catfish, suckers, cod and perch, and other finny critters, and I am getting so blamed smart, my cleverness would break your heart, if you could hear my twitters. I feel my good old brain expand, and gather force to beat the band, my intellect is sailing, my intellect that once was limp—and all this comes from eating shrimp, and mackerel and grayling. And all the time, by eating fish, I'm doing what the Allies wish, conserving swine and cattle; and as I chew a six-foot eel, within my glowing breast I feel I help to win a battle.—By Walt Mason.

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FISH AND THE STATE.

The Toronto News says editorially: The decision of the Ontario Government greatly to extend its war-time fishery activities means that the people will have a constant and plentiful supply of excellent fish at cost price. They will have whitefish, trout, herring and other fresh-water fish at figures well within the power of their purses. This reform will enable the community to conserve beef, bacon and other foodstuffs for shipment to the Allied armies and peoples. The public benefit here at home will be so great that the old conditions will never be revived. All fisheries will ultimately be nationalized.

Mr. Moreton Frewen, a member of the British House of Commons, writing with authority on economic questions, has contributed to The Nineteenth Century an article on the relation of States to fisheries. He insists upon the great abundance of fish life. He recalls a statement made forty years ago by Sir John Lawes to the effect that the meat yield of an average acre of ocean off the Nore is greater than the meat yield of 100 acres of the best Northamptonshire pasture.

Mr. Frewen questions the wisdom of applying all the scientific energy of the country to the cultivation of the land while neglecting, or practically neglecting, the cultivation of the sea. He explains that the business of fishing is conducted on a wasteful principle, particularly in Great Britain, where the expenditure on re-stocking is not over \$250,000 a year, about one-fifth of the amount expended by Canada and one-twenty-fifth of that spent by the United States. The investment of some \$25,000,000 by Canada an scientific fish propagation and preservation, Mr. Frewen adds, returns every year an amount equal to the whole investment and ten millions more.

In this country we realize that we are only dabbling so far, but the profitable result of the dabbling should lead to more thoroughgoing methods of food production from our coast and inland waters. As Mr. Frewen intimates, the public taste for fish as a staple article of diet should be cultivated. By comparing food production on the broad lands of the world with the growth of population, he shows that consumption is rapidly overhauling supply. The war is largely responsible, it is true, for the present situation. Still the war has merely hastened the crisis. For generations the world has looked to meat as the chief article of diet. It is time to turn to fish.

Since the ocean is common to all, Mr. Frewen declares that the business of fish conservation rests of right with the State. He endorses the proposal of Lord Dunraven that fishing should become a Government industry, that wholesale prices should be fixed by the State, and that cold storage warehouses should be established in every town to equalize the pressure of distribution. He cites in this connection what has been done already as an emergency measure by the Provincial Government of Ontario, and by the Commissioner of Fisheries for California, Col. Harris Winestock. Col. Winestock declares to the people of his State: "You can have fish as cheap as you please, if you will only eat more fish."

That is the requirement. A public demand for more and still more fish should bring into being in almost every country a combined system of State fishing, distribution, and replenishment. Further, since fish is among the most wholesome of foods, and since it can

be laid down, under Government supervision, for a low cost, the problem of under-nourishment which fosters tuberculosis among the poor, may be solved. Beef may fail. Mutton, and even pork, may become scarce, but the sea is a great storehouse of food which the world has neglected too long.

THE MARINE ENGINE IN THE FISHING INDUSTRY.

One of the greatest help to increased production in the fishing industry is the marine engine, and our Canadian fishermen are quick to grasp this fact. The day of sculling or pulling against an adverse wind to the fishing grounds is gone, and today not only is fishing prosecuted in a motor-driven boat, but the fisherman is finding that there is a great difference in marine engines, and speed being an essential factor to success in the catch, two and four-cylinder motors of the highest type are finding ready demand throughout the country in the industry.

According to latest statistics, there are over 12,000 motor boats employed in the Canadian fishing industry, besides a number of motor vessels of the larger type. This is an increase of approximately 4,000 in two years, and, with the tremendous production promised for 1918, it is safe to say that Canadian fishermen will be in the market for hundreds of marine engines of all types this coming spring.

Newfoundland, too, presents a growing field for the marine engine. Ten years ago it was a novelty to see a fisherman of that colony owning a motor-driven boat. Today it is the exception to see an up-to-date fishing engine minus one. One marine engine manufacturer alone claims to have over 2,000 engines in operation in Newfoundland's fishing industry.

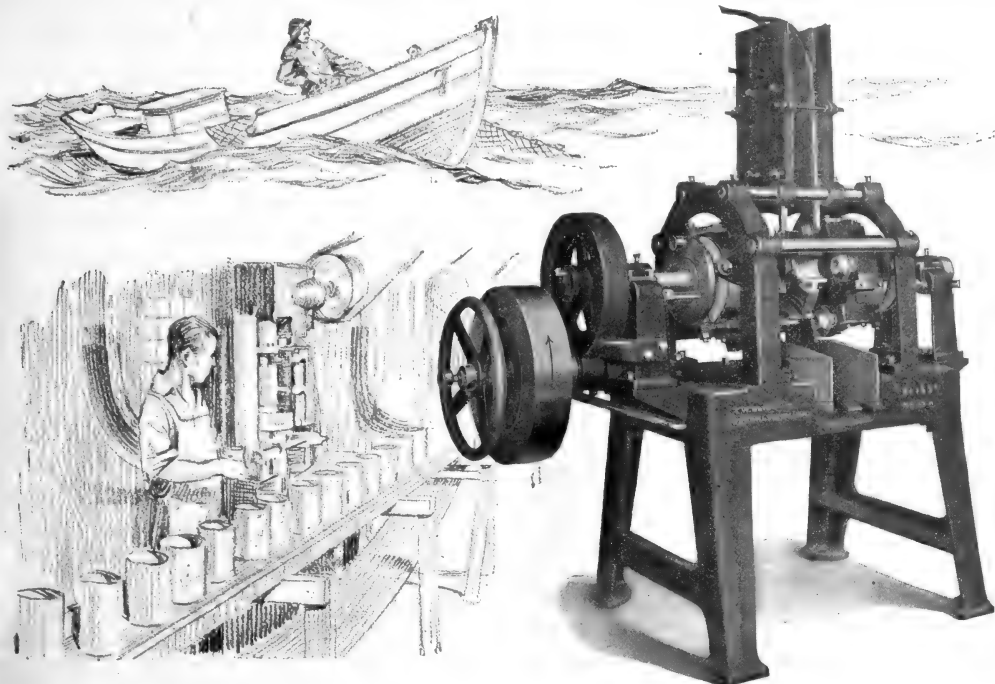
Marine engine manufacturers should find in Canada's and Newfoundland's fishing industries one of the greatest outlets in 1919 for their product.

The Roberts Motor Mfg. Company, Sandusky, Ohio, are placing on the market a two-cylinder four-cycle motor, rated 5 to 8 H.P. This motor is particularly adapted to small fishing boats, and one that will burn kerosene without any special equipment. It is 3 $\frac{3}{4}$ " bore, 4" stroke, and weighs 178 lbs. It is an ideal motor from a standpoint that it is economical in operation, has flexible power, and will give dependable service, behind which it has the Roberts Motor Mfg. Company's many years' experience in the building of marine aeronautic and stationary engines.

The price of this motor, which is their Model H-2 is \$100.00 F.O.B. Sandusky, Ohio. A four-cycle motor that can be sold at this price is one that the trade has been looking for, and they at present have on their books a number of orders for 90 days' delivery, their customers having placed these orders, so that they may receive their motors out of the allotment at present going through the factory.

CUTTING AND WASHINGTON INC. MOVE SALES OFFICE.

Cutting and Washington Inc. radio engineers and manufacturers have moved their sales office from the factory 26 Portland St., Cambridge, Mass. to 1147 Little Building, Boston, Mass. This change was necessary not only for the convenience of clients but on account of their rapidly expanding business.



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BILLINGSGATE MARKET.

London, December 8th, 1917.

Supplies have shown a slight improvement this week, but are still much below requirements. The features of the week's landings have been the arrival of fair catches of deep-sea fish caught in waters other than those adjacent to the British Isles — the comparative abundance of haddocks in landings at East Coast ports, the shortage in cod, and seasonal supplies of sprats. For the greater part of the week the weather was bitterly cold, which always checks demands in the consuming centres; the result has been that while prices have shown some fall at the coast ports, only trifling it is true, values current at Billingsgate and other distributing markets have rendered trading more or less unremunerative.

Herrings have been very short, and prices have touched £10.0.0 per barrel; in pre-war days £4.0.0 would have been considered almost a fabulous figure, even at this time of year. Mackerel supplies have shown a marked falling off. With the shortage in herrings there has been more or less of a famine in bloaters and kippers, and cold store stocks have been requisitioned to tide over the time of scarcity; even then rates have ruled at a level bringing these popular cured fish well within the category of "luxuries."

With markets in their present condition those firms which have been fortunate enough to secure freight for importing frozen fish from the other side of the Atlantic should have transacted fair business, although of course as dead as the proverbial door nail, but during recent weeks inquiry has shown fair animation, prices being quite buoyant. Here are a few typical importer's prices, ex-cold store, England: Salmon, by the case, 1s 2½d to 1s 6d per lb.; halibut, 1s 4d; case lots, 1s 2½d to 1s 3d per lb.; fresh haddocks, 9s to 9s 6d; cod, 9s to 9s 6d; hake, 9s 6d; codfish, 8s 6d; dabs, 10s 6d per stone. Home caught fish, refrigerated when supplies were more generous, herrings, 5s per 100; mackerel, 8s 6d per score. When it is borne in mind that the deep-sea fish are headed, gutted, and trimmed, thus reducing waste to a minimum, these figures are very reasonable compared with those ruling for fish from home waters.

London, December 15th, 1917.

General supplies received at the consuming centres this week can be considered fairly generous. Landings at different ports have varied from day to day, some ports being blank on one day, and other ports on another occasion. Taking the fishing ports collectively, Wednesday was the most unfavorable day, a dense fog then holding up the arrivals of boats at several places.

Haddocks have again been prominent in the catches from the North Sea grounds, while rather more cod has been available, and prices for the latter, although still high, have been less excessive. Among flat fish, rates for plaice have weakened, more at the distributing markets than at the coast. Most other kinds of flat fish have continued expensive, halibut on some occasions commanding more money than turbot.

Of the commoner kinds in request by friers, supplies have been scanty, dogfish on several days making as much as fresh haddocks, while good roker has been dear throughout.

There has been a marked scarcity in herrings, and those arriving from the West of England, together with a few from Ireland, have gone out to a keen de-

mand at very tall figures, £9.0.0 and upwards per barrel being touched. Mackerel, too, has been quite scarce. Bloaters and kippers have been quite out of reach of the majority of fishmongers, being fully 4d and 5d per pair for kippers and about the same rates each for bloaters, on the wholesale market, as compared with an average retail rate of 1d and 1½d in each case in pre-war days. Smoked haddocks also have been at famine prices. Sprats have been pretty plentiful, but in sympathy with herrings and mackerel have realized big rates.

Inquiry for frozen fish keeps fairly steady; this is quite contrary to the usual experience at this season of the year when trade is generally dormant. Prices are well maintained with a stiffening tendency.

London, December 22, 1917.

The markets this week have not presented any special feature of interest. In the week preceding Christmas demand is always an uncertain factor, and this year has brought no exception to the rule. Supplies have varied from day to day, but on the whole aggregate landings have been fairly sufficient. Fog, however, especial at mid-week disturbed the regular course of business so far as supplies was concerned, the markets being almost empty on some days when business commenced the belated consignments in some instances not arriving until past noon. Among prime fish, soles have been reasonably cheap, nor have either turbot or brill been at excessive figures as things go now-a-days. Plaice has hardened in value as the week has progressed; cod has been appreciably cheaper; haddocks, despite pretty good landings, have been firm throughout. The shortage in bacon and other food-stuffs, together with a great scarcity in kippers and bloaters, has given a big impetus to the consumption of smoked haddocks, and curers have been heavy buyers; prices, for smoked haddocks, however, have risen sharply with the greater demand, and this will no doubt check demand. All kinds of friers' fish—dogfish, catchfish, monkfish, etc.—continue expensive, while hake has averaged well over 15s per stone. Herrings and mackerel have been very scarce all the week; fair deliveries of sprats, but prices high in sympathy with the general tone of the market.

Inquiry for frozen fish remains steady, with no marked fluctuations in rates. General supplies for the next three months may be expected to be erratic, and frozen fish, were it prominently offered at the principal markets in the big consuming centres would meet a good reception.

London, December 28th, 1917.

This week's trading, of course, has been broken by the Christmas Holidays. No business whatever was transacted at any of the English ports or markets on Christmas Day, but contrary to the experience of recent years, when the training on Bank Holidays has been quite of a "holiday" character, demand on Boxing Day was fairly brisk for the fish available. The week's markets may be summarized thus: inquiry more or less active throughout, with prices well maintained and exhibiting a hardening tendency towards the close.

On Christmas Eve there was an insatiable demand for cured (smoked) haddocks, and the available supply was rapidly exhausted at famine figure; in fact, one salesman in Billingsgate made as much as 54s per dozen, 4s 6d each for a smoked haddock, first hand,

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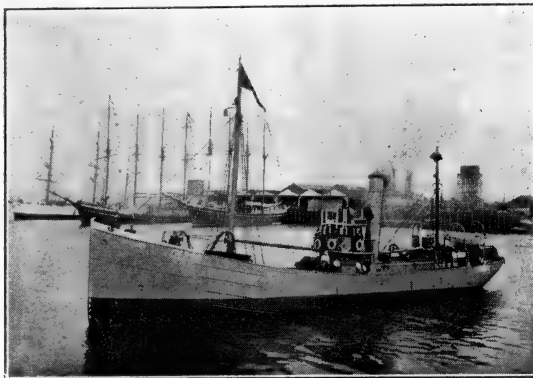
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National Fish Co., Ltd., Halifax and Port
Hawkesbury, N.S.

and although one is not warranted in giving this rate as a market quotation, it speaks volumes for the popularity of this excellent breakfast fish that a fishmonger should be found willing to pay such a price. The marked shortage in bloaters and kippers has given added zest to the demand for smoked haddocks.

As this report leaves London the fish trade is greatly perturbed by the possibility of the virtual closing down of an important section of the trade, viz., the fish friers. For many months friers have been faced by a growing scarcity of oil and dripping, and now the order has gone forth from the Food Controller that the fish trade must wait for the allocation of supplies of cooking fats. Unless sufficient pressure can be placed on the authorities to give the fish trade a fair share of the fats and oils available it will be a serious matter for the fishing industry. The friers purchase huge quantities of the commoner and rougher kinds of edible fish, for which there is no other outlet, and it is no exaggeration to state that were friers compelled to suspend business tons of good food would be unmarketable.

Reviewing the year 1917 it must be said that despite tremendous difficulties the fishing industry has been successful in "carrying on" fairly well. The catchers have had the time of their lives, prices having steadily risen throughout the twelve months. Merchants and salesmen on the whole have just managed to come out on the right side of the ledger, but the fierce competition to secure supplies has resulted in business being cut very fine. Fortunately, the public has responded pretty well to the increased cost of fish, otherwise many traders would have been "in the cart." No doubt the growing scarcity of other foodstuffs has assisted the fish trade, or perhaps it would be more correct to say that the supplies of fish have eased the food stringency. Quite a fillip has been given to the sale of frozen fish, the institution of frozen fish rations for the Canadian troops, which were afterwards extended to the British and Allied Forces, having secured great publicity in the daily papers. This, of course, is mainly due to the enterprise of Major Hugh A. Green, who must certainly be considered a great asset to the fisheries of Canada. It is now up to the trade in Canada to consolidate the footing gained in the markets of the United Kingdom, and to this end the trade in the Dominion should unite in placing pressure on the powers that be for the provision of the necessary freight. It is perhaps useless under present circumstances for individual merchants to expect to obtain refrigerated space for small consignments, but a number of firms could combine and thus make a sub-

stantial shipment. There is little doubt that Billingsgate, London, is the centre to which supplies should be sent, and the good offices of the High Commissioner in London, and our own Board of Agriculture and Fisheries, should be enlisted to place before the public the fine qualities of Canadian frozen fish.

London, January 5, 1918.

Contrary to the usual experience, when demand for most kinds slackens appreciably after Christmas, trade this week has been sustained throughout. Landings at the West Coast ports have been fairly liberal, but with the exception of Hull, where some good catches were landed from the deep-sea grounds on Monday, deliveries at East Coast centres have been uniformly light. An average number of trawlers has reached Grimsby, but their catches have been meagre in the extreme, pointing to stress of weather at the fishing grounds.

The comparative liberal quantity forward at Hull on Monday resulted in good supplies being received at Billingsgate on Tuesday. Unfortunately an unknown factor—the weather—upset all calculations. Rain had fallen during the night followed by a sharp frost, and the effect was to make the roads, which are either asphalted or composed of wood blocks, just like a sheet of glass, and it was impossible for the horses bringing the vans of fish from the railway termini to obtain a footing. Finally, it was nine o'clock and past ere the greater part of the fish reached salesmen at Billingsgate. By this time the majority of fish-mongers have left the market to proceed with the day's business.

Since the opening of the New Year, supplies have gradually fallen off, and prices of most kinds have risen to, and have been maintained at excessive figures. The only kinds at all plentiful have been sprats and herrings, but with the great shortage in other fish, and in all kinds of foodstuffs, these kinds have been readily snapped up at famine figures. The crisis in the meat trade, which culminated in a perfect scramble for supplies to-day with large numbers of the public unable to obtain any meat, brought on a keen inquiry for herrings, the only fish at all plentiful, and big prices were paid, fishmongers returning to the market for further supplies during the morning.

Canadian kippers would sell freely if available on the London market. Home-cured kippers are quite out of reach of the ordinary public, the demands of the Forces leaving very few for civilian consumption, with the inevitable result that prices are prohibitive to all except those with a long purse.

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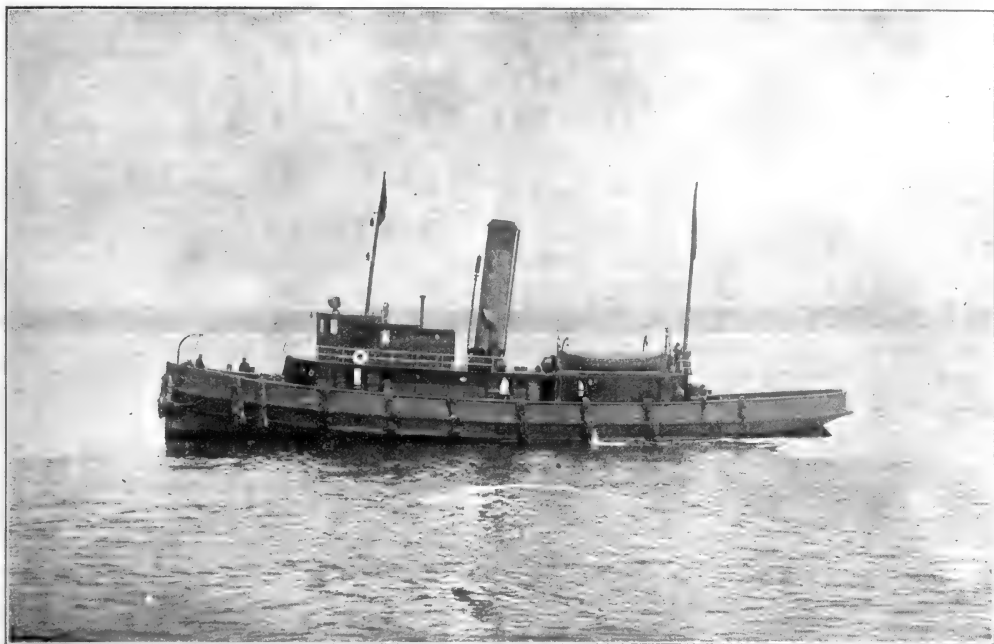
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The Need for Technical Education in Our Fishing Industry

In Canada few of us realize that there are about one in seventy-three of our population earning their living by fishing, in the United States the proportion is about one in every eighty. The industry is worth to the country some thirty-nine million dollars and yet we have to cry in vain for knowledge so that we may be able to compete with all other fish producing countries in the marketing of our produce.

Why should it be more necessary to give the cultivation of the land, or rather those interested in it, every opportunity of acquiring technical knowledge and leave those associated with the collection of food from the waters in ignorance? We are told by some that the fishermen do not want technical education, and further, that it is unnecessary for the large staff associated with our various Federal and Provincial Departments to gain the knowledge one would have thought so necessary to their calling.

Can we expect the best results when fishing licenses can be obtained from a Provincial Department only so long as the applicant is on the right side of politics or in some other way is a "big man" in his district, and recommended by his M.P., irrespective of his knowledge of his trade. Again, can we expect technical efficiency and economy of management when the staff for administration of our fisheries and in particular our hatcheries, is drawn from the ranks of school-masters, ministers, painters, mechanics, untrained farmers' sons, stable helpers and such like. What commercial undertaking could exist ten minutes under similar conditions. It is true, many of these gentlemen acquire certain "rule of thumb" knowledge and routine, for as a rule most of them content themselves in getting out statistics and writing reports on proposed regulations and worrying over the question of their political effect in the district to which they are to be applied.

Let us not, however, criticise the conditions of the fisheries service as it is, for that is outside the question at the moment, we only want to point out the necessity for training the many persons directly interested in our fisheries, even if they say, like so many of our farmers did, that they do not need it.

Agriculture would not be as it is to-day, were it not for education in its technical branches, is there any reason therefore why owning, as we do, the greatest fishings in the world, we should not spend a proportionate amount of money on fisheries education? Does not the value of the industry justify it? Does not the personnel of the industry justify it? Does not the citizens who are unselfish enough to consider the conservation of our fisheries for the benefit of posterity demand it?

We must realize that every trade and profession, even those trades and professions connected with the production of fish in our waters, the extraction of fish from our waters, the extraction of algin, iodine, potash, etc., from our seaweeds, the production of the pearly vessels for the button trade, the extraction of oils, glycerine and other valuable commodities from our fish—all these require the assistance of some central educational institution connected with them.

Other countries have acknowledged the necessity of fishery technical schools. England, Ireland, France, Germany, Japan, all offer opportunities for learning to

those anxious to acquire better knowledge of their trade or profession.

Japan, especially, has made the greatest strides in this direction, and it will be a long time before any country reaches the same point of perfection in that industry.

It is admitted that our fishing population, like our "back lot farmers," is proverbially difficult to reach; "they know it all," but on the other hand, by continual agitation these men must come to realize that Canada must progress. Their prejudice must be overcome in the same way it has undoubtedly been overcome in the case of the farmer by means of farmers' institutes and clubs. Further, we who are trustees of these great fishing waters must see to it that they are not mismanaged and neglected and should insist that the industry be put on the same basis as agriculture from the lowest rung of the ladder to the top. Is there any legitimate reason for not having a Minister of Fisheries or at least a Deputy Minister of Fisheries, giving his whole time to stimulating the industry.

Now, no better investment by the State could be made than on the introduction of fisheries technical education, for one result at any rate would be that greater care would be taken before backing parliamentary measures affecting fisheries. I venture to think that conservation would in every instance come before personal greed with technical knowledge behind it. Much of our legislation and fishery regulations would be almost unnecessary for fishermen and others interested would see for themselves the objects of such preventive measures.

In selecting objects of such a Technical Institute or system of education, we should have before us something after the following:—

- 1.—Conservation as tending to point out the objects of protection for the benefit of future generations and even for ourselves.
- 2.—Fishing marine and inland waters.
- 3.—The creation of the profession of Fishery technology so as to fill the various government offices, etc.
- 4.—The elevation of the fishing industry and fish culture to the same level as agriculture.

Now the next question is the scope of the instruction. Under the various headings:—

- 1.—Would come elementary biology distribution of species, the influence of geology, currents, temperature, etc., on fish, the effect of pollution, obstruction and abstraction of water on fish life.
- 2.—The modes by which fishing might be made more remunerative by the adoption of newer methods, the most modern methods of picking and preserving fish. The utilization of fish waste, etc. Navigation, study of the strain and internal combustion engine.
- 3.—Instruction in fish culture in all its branches, including the propagation of the pearly vessels. Elementary zoology, anatomy, physiology chemistry as applied to fisheries and their products.
- 4.—By the creation of a ministry responsible to Parliament with a subordinate technical staff. The establishment of fishermen's institutes or clubs on the lines of farmers' institutes. The circulation of instructive bulletins such as are done for agricul-

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ture. For example, bulletins on, various fish cultural methods, pickling of fish, preserving of nets and tackle, the manufacture of foods, fertilizer, glue, oil, etc., from fish waste, from seaweeds, etc.

Now it may be said that we are doing something in direction of technical education, look at our Fisheries Museum. It is true many of us have never heard of it, and those few who have discovered its location have failed to find anything of educational value to fisheries in it.

A large whale skeleton has recently been bought at a cost of some \$200 or \$300, also sea lions and similar mammals, there is also a collection of birds and birds' eggs and displayed in corners are a few plaster casts of fish not by any means all belonging to this country. It is possible the money could be better spent in education amongst fishermen. The collection, if the Victoria Museum authorities consider it worth while, might be induced to take it under their charge when Parliament moves into its new building. The appropriation for this Fisheries Museum amounts to \$8,000.

Then there is another source of money which might well be diverted into educational channels, that of the fishing bounties, which apparently do nobody any good and cost the country some \$160,000 annually.

Doubtless, under a searching business eye other investments of a like nature for which the country is not getting adequate returns may be discovered. We will all admit that there is no better nor sounder investment than education, so no minister need fear expenditure in that direction.

Finally we are at a period in our country's development when the future must be considered more carefully than in the past, so far as our natural resources are concerned, we must not let our raw materials drift into the hands of foreigners just because we are too indolent to acquire the necessary knowledge to development of them ourselves, we have already several examples in our fishing industry of this already. What do we do with our fish waste of some 260,000 tons annually, when industries are calling for high grade oils for the drug, soap and other trades, for glycerine for explosives, feed for our cattle and pigs and fertilizers for our soils, all obtainable from this waste; have we got beyond just talking about it? Before we have finished talking some foreigner will "jump" the whole trade by private contract for the benefit of his own country. What do we do, again, with our vast sources of seaweed? Do we make any attempt to meet the crying need for algin, potash, iodine, etc.? I think not—most of us do not realize that such commodities are obtainable from fish waste and seaweed. How many of us, and even fishermen, realize that our shirt buttons are produced from the humble fresh water clam? These and many like questions seem ridiculous in a country like Canada, but want of knowledge can only be discovered by question, and ignorance is the fundamental basis of all this neglect. Let us hope that now we have a business man who has had the privilege of rising from the ranks in his trade in private life, at the head of our Fisheries Administration, we may get business methods and efficiency inculcated into his Department, and further, let us hope we will inquire carefully into the expenditures in his administration and see if he and the country are getting their value.

Mr. Ballantyne will, if he proves to be the business man in office the country expects him to be, will want

to know how the appropriation of \$400,000 is expended on hatcheries and whether the latter "deliver the goods," the \$60,000 on the Dogfish Reduction works—are they run at the profit they should? Then we have an appropriation entitled Fisheries Intelligence, which absorbs some \$5,000. Again our fisheries patrol service appropriates some \$90,000, and if the truth be told, some patrolmen operating these vessels complain that they are very extravagantly run, and in one or more cases the vessels are far too large, in fact are nothing else but small gun boats, and cannot do the work efficiently.

At any rate there is an appropriation of between a million and a half and two million dollars set aside to protect and, let us hope, promote fisheries—do we get value for it under our present system without specialized education.

We finally ask the careful consideration of the new Minister, the urgent necessity of some central institute of fisheries technology, from which technical knowledge should radiate to the fishing districts of Canada.

We ask that experimental work be inaugurated; we have agricultural farms, why not experimental fish cultural stations and laboratories. We have two Marine Biological Stations, why have we no station on an our inland waters to study practical problems arising in Central Canada?

SOME CAUSES OF MARINE GASOLINE ENGINE TROUBLE AND HOW TO REMEDY THEM.

By G. L. MYERS,

Of T. McAvity & Sons, Ltd., St. John, N.B.

Below is a list of some probable causes of Marine Gasoline Engine trouble of the Make and Break Type and how to remedy them, by Mr. G. L. Myers; "The Marine Engine Man," of T. McAvity & Sons, Ltd., St. John, N.B., which may be of interest to some user and enable him to avoid mishap, trouble and delay.

Mr. Myers has been in the Marine Engine business for years and understands them from A to Z.

Make and Break Type.

Engine Fires Regularly But is Weak.

May be caused by:—

Muffler stopped up.

Spark shifter lever out of adjustment.

Engine Backfires.

May be caused by:—

Carburetor not adjusted properly.

Dirt in gasoline pipe.

Dirt in needle valve on carburetor.

Weak inlet valve spring.

Water in gasoline.

Engine Firing Irregularly.

May be caused by:—

Broken battery wire.

Loose battery connections.

Weak batteries.

Carburetor out of adjustment.

Oil on spark points.

Water in cylinder caused by broken head packing.

Badly worn spark points.

Jump Spark Type.

Engine Firing Irregularly.

May be caused by:—

Broken down insulation on wires.

Carburetor not properly adjusted, causing poor mixture.

Cracked spark plug.



C A N A D A

Fish Producers and Distributors

The Dominion Government, through the Food Controller's Office, has inaugurated a campaign to increase the consumption of Fish. This is being supported by an aggressive campaign of advertising — all to the one end — the increased use of Fish as a food.

To the Producer---

Get behind this campaign. Lend your aid and see that the distributor gets enough fish. Be sure your fish is packed right, and that it gets to the proper market in proper condition.

To the Wholesaler---

Largely upon you rests the success of this campaign. See that you have the supply necessary to support the demand. Co-operation on your part means much. The Government has provided improved boxes for the keeping and displaying of fish. See that the dealers get them. Show them how to use them. Urge the dealers to be satisfied with a reasonable profit and give their customers a satisfactory service. It all means better and bigger business for you and them.

To the Retailer---

In this campaign you will find the material on which to build an exceedingly profitable business. Be sure you are in a position to supply fish every day—especially Tuesdays and Fridays. Keep your fish right — display it right. This and the increased demand will mean bigger profits for you.

W. G. HANNA,
Food Controller,
Ottawa.

A defective connection at some point of the circuit.

Moisture on spark plugs, or

Poor contact in times.

Spark coil not properly adjusted.

Terminals on coils may be loose or damaged.

Much irregular firing may be prevented by periodically draining the carburetor.

Gradual Slowing Up With Mis-Firing.

May be caused by:—

Carburetor may be clogged up with dirt at jet.

Gasoline tank empty or air bound.

Gasoline valve partly closed.

Fouled spark plugs, due to over or poor lubrication.

Explosions in Silencer.

May be caused by:—

Cylinder missing fire and pumping explosive charges into silencer, which ignite from heat of next exhausted charge.

Gas mixture too weak to fire in cylinder.

Inefficient spark.

Over-retarded spark.

Jump Spark Type.

Knocking in Engine.

May be caused by:—

Defective lubrication.

Fly-wheel loose on shaft.

Loose cylinder on crank case, due to nuts slackening off.

Loose or worn bearings.

Pre-ignition, due to carbon deposit.

Spark too far advanced.

Too rich mixture.

Engine Stops Suddenly.

May be caused by:—

Broken spark plug.

Disconnected electric circuit.

Loose terminal.

No gasoline.

Tumbler on spark coil stuck.

Trouble at timer.

Broken wire.

Engine Refuses to Start.

May be caused by:—

Dry cylinders.

Battery plug not in position.

Fouled or cracked spark plug.

Gasoline shut off.

Improper gas mixture.

Improper ignition.

Open battery switch.

Poor compression.

Water in cylinder caused by leak from water jacket.

Water in gasoline.

FOREMAN FOUR-CYCLE ENGINES.

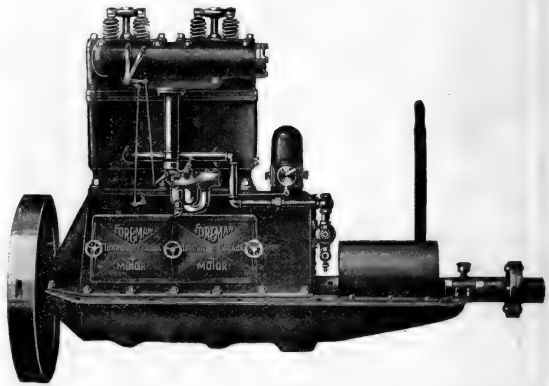
The Foreman Motor and Machine Co. Limited of Toronto are building a new four-cycle marine motor which will meet the demand for a really high grade power plane for commercial boats and cruisers, and which will be especially suited to the fishing industry.

The motor, as shown here, is up-to-date in every detail, built for economical operation and all day service. It is extremely simple and compact for a four-cycle motor. Overhead valves of large diameter give

highest efficiency and greater power, and, for a motor of this type which may be run for hours each day, the operating expenses will be the lowest possible.

The overhead valves, giving a combustion space free from pockets, give the most satisfactory results when running on kerosene; a special double-throttle carburetor, with the necessary heating fittings, are supplied with the motors running on fuel heavier than gasoline. This valve arrangement is such that the valves cannot drop into the cylinder if retaining-pin should be taken out.

All bearings throughout are of the highest grade Babbitt, and very liberal in size. The crank shaft, which is $2\frac{1}{4}$ " diameter, has a long bearing at each end and a bearing between each cylinder. Connecting rods of the marine type of forged steel, with a Babbitt lined bronze bearing for crank pin which is $2\frac{1}{4} \times 3$ ". Piston pin has large bronze bushing. All main bearings and connecting rod bearings can be adjusted through large hand hole plates in both sides of motor. The fly wheel is bolted to flange forged on crank shaft.



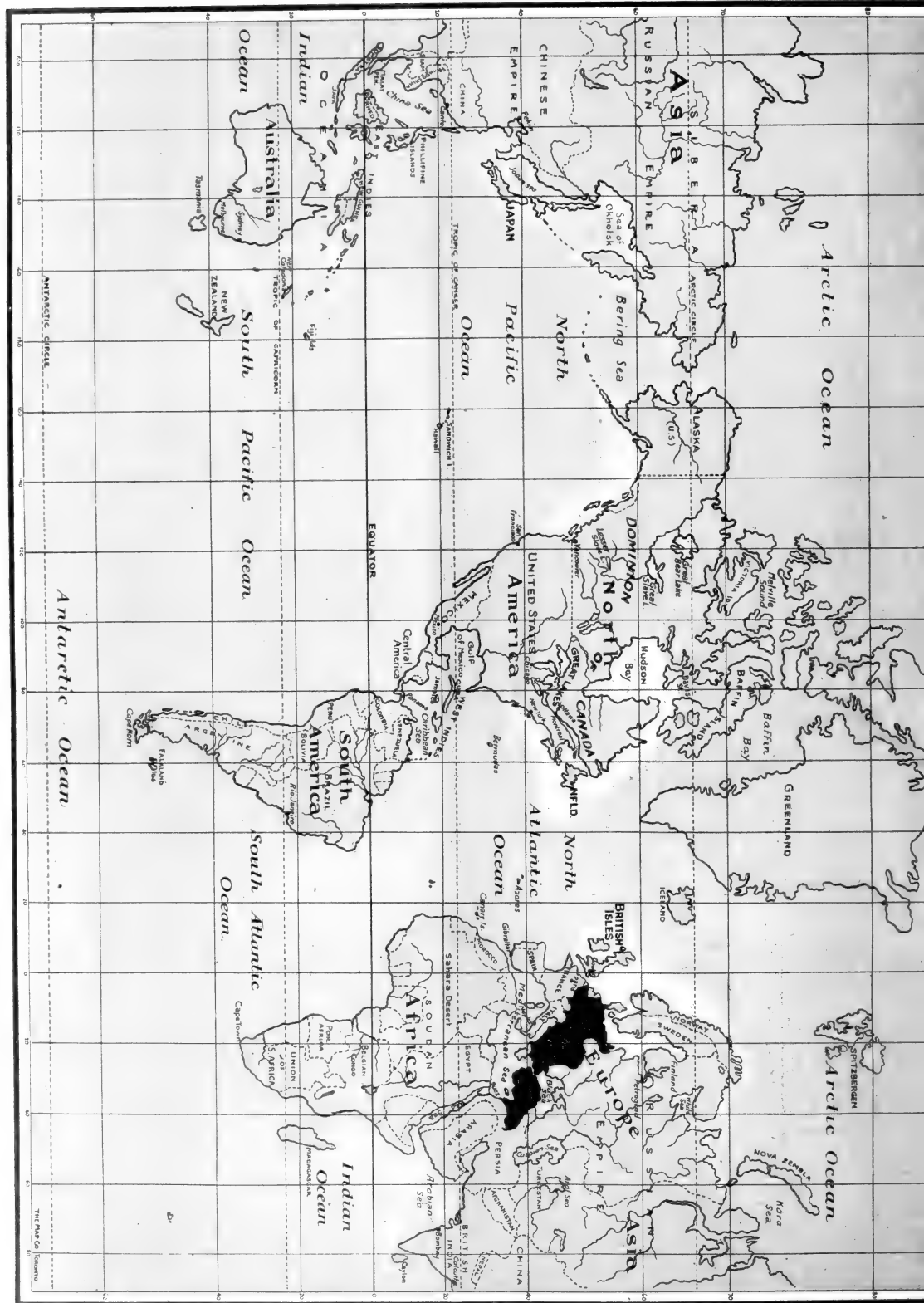
The cam shaft, which is $1\frac{1}{4}$ " diameter, is supported at the driving end by a heavy double ball-bearing; also the intermediate gear runs on a roller-bearing. With this high grade construction, wear will be eliminated for the longest possible time; therefore, keeping the working parts in their original adjustment.

Water circulation for the medium speed types is by plunger pump driven by eccentric from the cam shaft; for the high-speed outfits a gear pump is used. For the oiler a plunger pump in base pumps from the aft end to bearings and connecting rods with splash for other working parts in base. Troughs in base keep oil to proper level.

Ignition is either Atwater-Kent, or High Tension Magneto with impulse start off, allowing meter to be started when turned over at the lowest speeds. Both Atwater and Magneto can be supplied, using two spark plugs in heads. A Joes gear, of the Duplex type is supported on base extension, with necessary thrust bearings of very liberal size.

The two-cylinder motor, as shown, is rated at 15 H. P. at 500 r.p.m.; the four-cylinder is rated correspondingly.

The Company also build two sizes of two-cycle motors. 6 and 12 H.P. in two cylinders, which have been widely known throughout Canada for the past six years.



The above map illustrates the article, "Sources of Capable Seamen," which appears elsewhere in this issue.

The location of the principal Fishing Grounds of the world is indicated by the white areas.

THE CANADIAN FISHERMAN

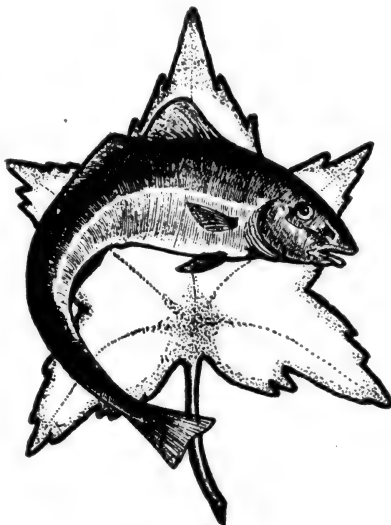
A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

F. WILLIAM WALLACE
EDITOR

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Published on the 24th day of each month. Changes of advertisements should be in the publisher's hands ten days before that date. Cuts should be sent by mail, not by express. Readers are cordially invited to send to the Editor items of Fishery news, also articles on subjects of practical interest. If suitable for publication these will be paid for at our regular rate

Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, FEBRUARY, 1918

No. 2

THE FISHERIES AND THE MERCHANT MARINE.

The value of a fishing fleet to the development of a nation's mercantile marine is strikingly illustrated in the article by Mr. J. J. Harpell, published in this issue.

The article shows plainly that Canada is wonderfully endowed with the fishery resources which are capable of supporting a large fishing fleet, and, with the development of the fisheries, men for the merchant marine are automatically trained. There is no need to go into the whys and wherefores of this fact. The great maritime nations are all great in their fisheries and fishery resources. In the old days when Canada possessed a merchant fleet, many of the men who officered these ships commenced their seafaring careers in the fishing dory.

The fishing fleets are the greatest schools of seamanship. In our opinion, the man who has put in two years in a Grand Banker is a better sailor than the man who served a three or four years' apprenticeship in a steamer or square-rigger. In the small craft, a man becomes more intimate with the sea and its ways. He has more to do on his own. His initiative and individuality is called into play more so than on the large ships where everything is done by the crowd or by mechanical means.

Mr. Harpell's article is a serious and thoughtful exposition of a matter which is of vital importance to Canada and her future as a nation. Our future lies on the water just as much as Great Britain's. Our enormous exportable resources should be carried in Canadian ships — built and manned by Canadians.

The old days when Canada built and sailed wooden ships are being revived in the building of ships of steel. What of the men to sail them?

CONTROLLED CANADIAN FISH IN ENGLAND.

An item in a London, Eng., paper states that:—"Messrs. Peter Forge and Grant and May, of Billingsgate Market, are selling frozen Canadian hake, brought over under the auspices of the Ministry of Food. The controlled wholesale price is £6 (\$30) per box of 200 lbs. of fish; the retail price must not exceed 10½d. (21c) per lb. for whole fish, and 1s. 1d. (26c) for cuts."

What would our Canadians here think of paying 26c a pound for frozen hake? It's hard enough to sell it at 10 cents. The above paragraph shows that this much despised fish in Canada fetches a good market and a good price overseas, but what puzzles us is where the discrepancy in price comes in considering it was landed in Liverpool at 8 cents per pound.

THE INTERNATIONAL FISHERIES COMMISSION.

The International Fisheries Commission of Canada and the United States concluded their sittings on the Atlantic Coast for the present and will resume again at Seattle on April 24th to consider the Fraser River salmon question and possibly the conservation of the halibut.

The Commission held sessions in Washington, Boston, Gloucester and St. John, N.B. The sessions in Boston and Gloucester dealt largely with the question of reciprocal privileges for fishing vessels between Canada and the United States. The abolition of the regulations of the Treaty of 1818, by Canada, and the rescindment of the law forbidding Canadian fishermen to land their catches in U. S. ports direct from the fishing grounds, by the United States, were the two points principally under discussion. While there was some little opposition by the American fishermen and vessel owners to Canadians securing the privilege of landing fish in American ports, yet the general tenor of the sessions favored a "fifty-fifty" agreement. There is little reason to doubt but what the *Modus Vivendi* will be modified by us and American fishermen will receive the benefits of our ports in securing bait, ice, supplies, men and similar conveniences, while in return, our fishermen will be able to run their catches direct to the American market without transshipment. No discrimination will be made against vessels propelled by power.

In St. John, N.B., uniform lobster regulations were advocated with a 10½ inch size limit on the adjoining waters of New Brunswick and Maine, and a shorter fishing season. Protection of the shad was strongly urged and a three year close season suggested. The upper reaches of the Bay of Fundy was now absolutely depleted as a shad ground. Uniformity in fishing laws between both nations was advocated.

A noticeable feature of the meetings was the cordiality and spirit of good will shown by the witnesses on both sides. The fact that both countries are allied together in the common cause overseas has had a wonderful effect and the old irritations on fishery questions will undoubtedly be eliminated.

CHEAP SEA FISH FOR WESTERN CONSUMERS.

Two schemes to provide Pacific flat-fish to consumers in the Prairie Provinces as far east as Winnipeg at reasonable prices and in good supply, were submitted to the Food Controller recently. The first plan called for the operation of a steam trawler by the Government and the conscription of a crew to man the vessel. The scheme, as published in the press, based all financial estimates on a monthly minimum catch of 400,000 pounds of flounders, soles, skate, etc. The trawler to be operated is the "James Carruthers," belonging to the Canadian Fish and Cold Storage Company, Ltd., of Prince Rupert, and the only vessel of the kind on the Coast at present. The fishermen were to be allowed ½c per pound on fish landed, dressed, on the dock at Prince Rupert; the trawler would be allowed 1c per pound to cover cost of operation, and the Cold Storage Company would receive 1c per pound for freezing and labor; boxing, ¾c per pound; loading on cars, ¼c per pound and 1½c per pound profit—in all 5c per pound, f.o.b. cars, Prince Rupert.

The fathers of the scheme—who are level-headed

men—figure out in some mysterious way that this fish could be retailed in Western centres at two pounds for 15 cents. How they arrive at this conclusion beats our comprehension.

In the first place a minimum catch of 400,000 lbs. per month for a small hooker like the "James Carruthers" is far too high an estimate to base costs on. A minimum of 250,000 lbs. with a probable maximum of 400,000 lbs. would be more like it. At five cents per pound, f.o.b. Prince Rupert, to be sold direct to retailers throughout the West, the fish would have to be shipped in express refrigerator cars at the less-carload express rates which range around \$3.20 to \$3.80. The Government pays two-thirds of the transportation charges, therefore the carriage on the fish would run around 1¼c—making the cost to the retailer 6c. The retailer's profit was to be fixed at 1c per pound—a spread which no retailer would consider for a moment—and in this way, fish costing 6¼c would be retailed at 2 lbs. for 15c.

The scheme falls down on the estimated catch of the trawler and the retailer's spread. The alternative plan submitted by Mr. John P. Babcock, Assistant Commissioner of Fisheries for British Columbia, and amended by the Food Controller's Fish Committee is more reasonable. In it, the fishermen are allowed ¾c per pound for trawler caught flat-fish which is a price on average catches of 250,000 lbs. per month that will place them on a par with the money they would make halibut fishing if they ship as they did before—ten fishermen to a trawler. Five cents is allowed the Company for operating the trawler, fitting her out, paying sailing crew and boarding all hands; freezing, boxing, icing and loading, f.o.b. cars, Prince Rupert. Adding the average express rates of 1¼c to the Prince Rupert price, the cost to the retailer would be 7 cents per pound. The retailer's spread is placed at 3c per pound—which is a fair and reasonable profit. This brings the fish to the consumer at 10c per pound.

All prices on these Pacific flat-fish will be fixed by the Food Controller and an advertising campaign started in the West to make the people acquainted with the new sea-foods and to use them in place of meats. The prices agreed upon will allow the Vancouver producers to supply the market also and thus augment the supply. A good demand will undoubtedly spring up and hitherto unmarketable species of Pacific fish will become staples and remain to offset the vanishing and high priced halibut.

The Government operation of the trawler was submitted to the Fisheries Department before any action was taken on the alternative scheme, but the Department rejected the proposal as unfeasible. We feel that they took the safest course in doing so as Government competition with private established enterprises is to be deplored and forms harmful precedents.

RETAIL DEALERS HINDER FISH CONSUMPTION.

Circular letters are being sent by the Fish Committee of the Food Controller's Office to the clerks of municipalities throughout Canada with a view to ascertaining what is hindering the efforts to secure increased consumption of fish. With this information available, it is expected that many of the difficulties can be overcome. It is known that the campaign for increasing fish consumption is being seriously ham-

pered in many places by the indifference or lack of enterprise on the part of dealers. Under the arrangements made by the Food Controller's Office to assist in prompt distribution of Atlantic fish to markets in Eastern and Central Canada, the public should be able to secure an ample supply at reasonable prices, if the retail dealers were doing their part. Fish merchants would have no difficulty in obtaining moderately-priced Atlantic fish if they would take the trouble to order supplies from licensed wholesale dealers.

Consumers are advised to demand from their dealers cod, haddock, herring, skate, pollock, flatfish, pickerel, tullibees, pike and other moderately-priced fish and to insist upon the merchants ordering supplies. With the co-operation of the public and the trade, the per capita consumption of fish in Canada would easily be doubled thus increasing considerably the supply of Canadian meat available for shipment to the soldiers.

Prior to the war it was estimated that the per capita consumption of fish in the Dominion was about 29 pounds per annum or slightly more than half a pound per person per week. It is known that this has been very considerably increased since that time by the work of the Food Controller, but fish consumption is still far short of what it should be. The Fish Committee is distributing to the retail fish dealers a placard bearing the slogan: "A pound of fish per week per person."

COLD STORAGE—A FISH TRADE NECESSITY.

The Cost of Living Commissioner's Reports on food-stuffs held in storage, while it has not castigated the fish trade, yet we suffer under the odium which is clothing cold storage in general. Without cold storage, the fish business of Canada couldn't exist. There are only two methods of preserving fish—by salt and by freezing. Preservation in ice is only feasible for a limited period and stocks which cannot be consumed within a day or two after landing must be prevented from spoiling by salting or freezing.

The fresh fish trade is an uncertain gamble. When fish is landed in quantities greater than the demand, it must be placed in cold storage to keep, and when supplies are low, the stock in storage is drawn upon to feed the market. Fish run in seasons. Herring, mackerel, salmon, haddock, sword-fish, shad, smelts, most fresh water fish, and others must be placed in cold store to supply the demands which recognize no seasons. The seasonal fish in plenty in December is just as popular in June when it is not to be caught. The cold storage stabilizes the supply and the prices. Were it not for the stocks in storage, certain fish in the off seasons, would be unprocurable or as expensive as strawberries in January.

The cold storage in the fish business prevents waste and keeps fish prices low. The dealer in the inland centres equipped with cold storage can order fish in car-load quantities and sell cheaper. Without storage, he could only handle fish in small express shipments and in quantities sufficient only for day sales—an expensive and hazardous business.

The cold storage has revolutionised the distribution of fish. Frozen or glazed in cold storage freezers, fish can be transported distances impossible by icing alone. Salmon and halibut from the Pacific are mar-

keted in England—a feat which would be impossible except through freezing and storage. There could be no fresh fish business in Canada to-day which would amount to anything or cater to the public demand for fish were it not for the cold storage.

There are a thousand arguments for, and only one against, the cold storage of fish. The negative argument is the holding of fish for a rise in prices. In so far as the fish trade of Canada is concerned, cold storage has never been mis-used in this manner and no single instance can be cited to the contrary. The public prejudice against cold storage goods has always crowded the price down and strictly fresh fish will always command a better price than frozen fish.

The fishing industry of Canada could be developed a thousandfold if we had more cold storages near the fishing localities. In the development of the future, cold storages and modern fishing methods will place Canadian fish in the European markets just as the limited means at present have enabled at least 15,000,000 lbs. of our frozen fish to be shipped overseas during 1917. To the fish trade and the fish-eating public, cold storage has been a blessing.

TO FINANCE ONTARIO FISHERIES SCHEME.

In order to provide working capital for Hon. Finlay Macdiarmid's great fish enterprise, which is expected to bring to Ontario consumers, at cost, all the fish they need, an appropriation of nearly \$200,000 is being asked for in the supplementary estimates presented to the Legislature recently. For acquiring cold storage accommodation, providing capital to carry fish and for transportation \$125,000 is to be voted. A large part of this money will probably be used in buying cold storage warehouse accommodation in Toronto, or, in the event of present negotiations falling through, in leasing it. Part will be used in leasing cold storage space in warehouses in London and St. Thomas as shipping centres for Western Ontario. An appropriation of \$23,500 is being taken for the erection of docks, buildings, tramways, etc., at Lakes Nipigon and Nipissing, where the Government is carrying on fishing operations itself. For salaries, expenses, insurance, etc., \$31,000 will be voted, while for the purchase of horses, harness, etc., \$15,500 will be needed.

B. C. HERRING FISHERY GOOD.

Vancouver, Feb. 8.—Mr. A. L. Hager, manager of the New England Fish Co. and the Canadian Fishing Co., states that the herring run is now on and that the fish are piling into Barclay Sound and Nanaimo harbor in vast quantities. The steamer Imbricaria has arrived here with 100,000 pounds of herring from Barclay Sound where the company operates a seine. The smaller fish will be used as halibut bait and the larger herring will be kippered or turned into bloaters.

The Imbricaria brought word that there were more herring running in Barclay Sound than the operators could handle. Mr. Hager has advised that the herring is also running in Nanaimo.

"Big catches have been made during the last few days and seines have brought in from 100 to 150 tons of herring at a haul," said Mr. Hager.

The Nanaimo run is very late and news that the fish are appearing is welcome. Pender Harbor has already proved a failure, and it was feared that Nanaimo would also go without fish.

WILL THE LOBSTER FISHERY BE SUSPENDED?

In view of the fact that Great Britain is placing a further embargo against the importation of lobsters, or only allowing their importation if space offers—which is not an assurance to rely on—and of the universal demand for restricted seasons to prevent total extinction, it is reported that the Canada Food Board will suspend the lobster fishery for the duration of the war.

The total pack of lobsters in Canada averages 165,000 cases annually. Newfoundland contributes about 12,000 cases. England and France takes about two-thirds of the pack normally. The U. S. and Canada absorb about 35,000 cases and 15,000 cases respectively.

The lobster is a luxury. There is no argument as to its being a cheap food irrespective of its nutritive value. The quantities of tin-plate used and the employment of some 20,000 men who could be engaged in more productive fisheries or occupations are considerations which cannot be overlooked.

With no market offering and the high cost of operations, the lobster canners and fishermen will probably accept the suspension, if enforced, as a necessary war measure.

NEW DEVELOPMENTS IN ATLANTIC FISHERIES.

Great developments are taking place in the fishing industries of the Atlantic coasts of North America. Newfoundland, which was primarily a salt and dried cod-fish exporting country, is now coming into the field as a huge exporter of fresh and frozen fish.

The Reid-Newfoundland Company, railroad and steamship owners, have built a huge cold storage at St. John's, N.F., of 20,000,000 lbs. capacity, and will build smaller storages as fish collecting stations at various fish producing centres on the Newfoundland coast. These smaller storages will have a capacity of 250,000 lbs., and the coastal steamers of the Reid-Newfoundland Company will be fitted with refrigeration chambers to transport fish from the outport storages to the main unit in St. John's.

From the St. John's plant, Newfoundland, frozen fish will be shipped to the British and Continental markets, and also to the United States, and the promoters are confident that the present export trade in Canadian frozen fish will remain after the war as a permanent commercial enterprise.

The waters of Newfoundland, and the great fishing banks adjacent thereto, afford almost inexhaustible supplies of cod, haddock, hake, herring, whiting, skate, soles, flounders, halibut, etc., and formerly, the only fish taken was cod, which was salted and dried for the Brazilian and Mediterranean market. With the cold storage facilities now afforded, Newfoundland's fishing industry is entering upon a new era, and the day is not far distant when St. John's will become a base for steam trawlers—the catches of which will be frozen and shipped to England.

St. John's is only 1,800 miles from England, and fish can be transported just as readily as Pacific halibut is transported across the continent to Boston and New York. English capitalists are discussing a scheme of fast fish carriers to transport fish from Newfoundland to England in five or six days, and there is every probability of the plan being put into operation.

Canada has added another modern steam trawler to the Nova Scotia fleet, and if more vessels of this type were procurable, a large fleet would have been in operation ere this. The United States have built a number of steam trawlers during 1917, and have several more coming down from lake shipyards in the spring. Some sixteen trawlers are now being operated out of United States Atlantic ports.

There is a possibility, in the near future, of developing the fisheries of the Bahama Islands. Snappers, groupers, king-fish, jew-fish, and numerous other semi-tropical varieties are caught in great numbers around the islands. Plans are being discussed by parties interested in the Bahamas of erecting a cold storage plant to freeze these fish for export to the United States and Great Britain. The success of the frozen fish trade between Canada and England since the war is paving the way for the development of fishery resources hitherto restricted or unutilized.

ANNUAL CONVENTION, LAKE ERIE FISHERMEN'S ASSOCIATION.

The third Annual Convention of the Lake Erie Fishermen's Association was held in the City Hall, St. Thomas, Ont., on February 18th, 19th, 20th, and 21st, and was a most successful and enthusiastic gathering. The programme was excellent in every particular and covered the following subjects: "Canadian Markets," Mr. Pert, Westcott, Kingsville, Ont.; "Practical Methods of Fishing," Mr. H. Crossley, Lake Warden, State of Ohio; "Co-operation," Mr. S. L. Squires, Ontario Government Fisheries; "The South Shore Association," Mr. H. Hinrichs, Erie, Pa.; "The Educational Value of the Canadian Fisheries Association," Mr. J. J. Harpell, Montreal; "Some Live Questions for Fishermen, National and International," Lantern Lecture by Dr. E. E. Prince, Dominion Commissioner of Fisheries; "Fish Culture in Canada," Mr. J. A. Rodd, Superintendent of Hatcheries, Ottawa; "Pennsylvania Fisheries," Mr. N. R. Buller, Pennsylvania Commissioner of Fisheries; "National Economical Value of the Canadian Fisheries Association," Mr. Alfred H. Brittain, Vice-President, Canadian Fisheries Association, Montreal; "The History of a Fish," Dr. A. G. Huntsman, Toronto; "Why Fishermen should be interested in Hatcheries," Mr. A. S. Brown, Kingsville, Ont.

A glance over the addresses and the speakers is sufficient evidence of the progressive spirit of the Lake Erie fishermen. Needless to add, the Canadian Fisheries Association is justly proud of its affiliation with the Lake Erie men.

The following message was sent to the Convention by the Food Controller in the absence of a representative from his office.

A. E. Ponsford, Esq.,
President, Lake Erie Fishermen's
Association,

Dear Sir,—On the occasion of the Annual Convention of the Lake Erie Fishermen's Association, I would be glad if you would urge upon your members the necessity for increasing, in every way, the production of fish, in order that it may take the place of beef and bacon so urgently needed by our soldiers and civilian Allies overseas.

There is no need for me to dilate upon the great

necessity for conserving our exportable food-stuffs, and in addition to urging the fishermen to make greater efforts in the production of fish, I would also ask them to use as little beef, bacon and white flour as possible on tugs, in fishing camps and in their homes. With the opportunities which you have for procuring fresh fish you will be doing a great deal to save the necessary foods by using as much fish as possible in your daily menus. The people of Canada are consuming fish foods in greater quantities than ever before, and it is imperative that the supply be maintained. I feel confident that any appeal made by me to your members for the production of fish and the conservation of food will not fall upon deaf ears.

Wishing you a successful and prosperous fishing season, I remain, etc.,

HENRY B. THOMSON,
Food Controller for Canada.

PISCATORIAL PARAGRAPHS.

Five million pounds of frozen fish of various kinds have been shipped to the Canadian troops overseas from Canada. An order for tullibees, frozen, has been placed in the most recent contract.

Mr. Edward Tinsley, for twenty-two years chief game and fishery inspector for the Ontario Government passed away at his home in Hamilton, on January 28th. Mr. Tinsley was born in Carlton, England, and coming to Canada when a young man entered the Grand Trunk Railway as a locomotive engineer. He died in his eighty-fifth year and was universally respected.

The Canadian Fisheries Association has been asked to consult its members and arrange for the securing of spawn for the Ontario Government hatcheries. Great difficulty has been experienced by hatchery officials in securing enough spawn to adequately replenish the lakes and keep the plants running.

It is reported that the use of motor boats in the salmon fishery of Northern British Columbia will be prohibited for a term of five years.

Col. Cunningham, Chief Inspector of Fisheries for British Columbia, paid his annual visit to Ottawa during the early part of February.

All retailers of fish, in common with retail grocers, will be licensed by the Food Controller in the near future. All wholesale fish dealers are under license now.

The Digby fishing schooner, "Albert J. Lutz"—the fishing trips of which has several times been recorded in this magazine—has been sold to A. Moulton and Co., of North Sydney, N.S., who will employ her in the Newfoundland trade. The "Lutz" was famous as a

fast sailer and holds the Nova Scotia Fisherman's Cup. She also landed the largest trip of halibut caught by a Canadian Atlantic banker—82,000 lbs.—in 1913.

A recent Order-in-Council permits American vessels during the year 1918 to land fresh fish in British Columbia ports for shipment in bond to the United States. American vessels will be permitted to purchase bait, ice and supplies in B. C., with the understanding that any fish caught with a Canadian baiting shall be landed at a B. C. port and forwarded to the U. S. under Dominion Customs regulations.

Fish is cheaper in Canada than in the United States.

FISH SALES GREATLY INCREASED.

A large fish company operating on the Pacific coast reports that its sales during December, 1917, amounted to 870,305 pounds, as compared with only 417,123 pounds for December, 1916.

WINDOW DISPLAYS OF FISH.

Fish lend themselves to attractive window display. It is possible to make a better display of fish than of meats. Suggestions as to how to make attractive displays of fish will be sent to any dealer upon application to the Food Controller's Office.

GREAT SHORTAGE OF AMMONIA.

The importance of storing a large supply of natural ice will readily be recognized when it is pointed out that there is now an absolute shortage of ammonia in the United States of 60,000,000 pounds per annum for war and commercial purposes.

TO INSTALL CASH AND CARRY SYSTEM.

The Pegnem Fish Company, Montreal, will install the "Cash and Carry" system of doing business as outlined in our Editorial in the January issue. The Canada Food Board endorses the system and retailers of fish are being circularized by the Food Controller to do business under the plan—our Editorial on the matter being attached to the circular.

DOGFISH AT \$3.00 PER PLATE.

As a result of the campaign in which the United States Bureau of Fisheries has taken an active part for the wider use of grayfish one of the most luxurious New York hotels (the Biltmore), at which Christmas was observed as a meatless day had grayfish under its proper name as the basis for its dinner menu. The price per plate was \$3.

THE "CASH AND CARRY" PLAN.

The "Cash and Carry" system as applied to retail purchases of fish is being advocated by the Fish Committee of the Canada Food Board, and the retail trade is being asked to put prices on this basis. A retail dealer in Montreal has decided to adopt the "Cash and Carry" system, while a Winnipeg concern who has adopted this principle has been able to reduce its price in consequence.

PACIFIC TRANSPORTATION SUBSIDY EXTENDED.

In order to popularize the lesser known varieties of Pacific fish and to provide cheap sea-food for the West, the Marine and Fisheries Department, upon the recommendation of the Canada Food Board's Fish Committee, will extend the present two-thirds transportation subsidy to cover all points in British Columbia. The four Western Provinces will all benefit by the assistance given. British Columbian towns will thus be enabled to procure the cheaper fish now being arranged for by the Canada Food Board.

NO FISH IN LONDON "MEATLESS" TUESDAY.

London, Feb. 13.—Because Scotch fishermen will not go fishing on Sundays, the choice of Tuesday as London's official meatless day is declared by London fish dealers to be an official blunder. The fish caught by Scotch fishermen on Mondays, get here too late for London's consumption on Tuesdays.

Cornish fishermen will not catch fish on Sundays, either. They carry their scruples against Sunday labor further than do the Scotch fishermen.

POOR SEASON FOR THE PAS FISHERIES.

It is authoritatively stated that the catch this season from The Pas fisheries will not be nearly as large as anticipated. The reasons for this are:

The uncertainty of train service on the Hudson Bay railway at the time when it was necessary to get in outfits and supplies.

Early and heavy snowfalls resulted in thin ice on the lakes and a number of these have been flooded, making hauling very difficult.

Prices set by the food controller, 7½ cents for whitefish, pickerel and trout delivered at The Pas, do not allow sufficient margin for the fishermen owing to the heavy expenses. The average cost of delivery is placed at 2½ cents per pound at the least. Many fishermen have quit work.

The estimated output in the north is as follows: From Hudson Bay railway points to be delivered, 40 cars; from northwestern lakes, such as Athapapuskow, Sturgeon and Beaver, 20 cars.

FISH—A POUND A WEEK PER PERSON.

If every man, woman and child in Canada to-day ate one pound of fish per week the annual amount consumed would total 416,000,000 lbs. At the present time the consumption is around 300,000,000 lbs. and that is under the stimulus of fish substitution for meat.

One or two fish meals per week is no great hardship. It should not be regarded as a hardship at all. If certain people think that eating fish is a penance for their sins, we in the fish business would sooner they left it alone altogether. We ask no person to suffer unnecessarily, but the person who can't eat some variety of fish—and there are dozens available—then there is something materially wrong with his or her taste or digestion.

A placard is being printed by the Food Controller and will be distributed to all the retail stores handling fish. The card reads: "EAT FISH—A POUND PER WEEK. Eat at least one pound of fish per week and save the beef and bacon for the soldiers." This slogan will help the fish consumption to a very material degree.

NEW REGULATIONS FOR B. C. SALMON FISHERIES.

The following official statement with regard to the salmon fisheries of British Columbia was made public on February 16, by the minister of the naval service:

"After a conference with his officials with regard to the regulations and policy to govern the salmon fisheries in District No. 2, British Columbia, during which the whole matter was thoroughly considered, Colonel Ballantyne, minister of the naval service, reached the following decisions:

"1. That no licenses for salmon canneries in addition to those already authorized will be granted this year. This decision was reached because it was found that the existing canneries can more than take care of all the salmon that may be allowed to be caught. It is recognized that if the privilege is thus restricted, those engaging in canning should be required to pay into the public treasury a fair proportion of their profits. As the system of accounting amongst the canners is so diversified, it is impossible now to determine what this should be, but during the present year a satisfactory system of accounting to be used by all the canners will be worked out, and each will be required to give full and uniform returns to the department of the naval service of his operations, so that after this season an adequate license fee can be required.

"2. That, as the runs of salmon and the conditions on the spawning beds do not warrant a greater amount of fishing than is now permitted, no licenses for additional fishing privileges will be authorized this year.

"These two decisions do not apply entirely to the Queen Charlotte Islands, where the conditions are different from those now existing on the mainland.

"3. That, as the evidence of the cannery managers, the canners and the fishermen, submitted to the special commission which last year investigated the salmon fisheries of this district, was nearly unanimously opposed to the use of motor boats in salmon fishing operations, such boats will not be allowed this year.

"4. That to enable proper arrangements to be made for the issuing of gill net licenses independently of all canneries, licenses will be granted this year on a similar basis to last, but hereafter no attached licenses will be issued.

"5. That rigid enforcement of the Fishery Regulations will be carried out, and the protective force will be sufficiently enlarged to enable this to be done.

"6. On his return to British Columbia in the next few days, the chief inspector will call together those applying for new licenses in different portions of the province where such may be safely granted, and each applicant will be required in the presence of the others, to show why he considers his application should be favored. Immediately following such investigation, a decision on the different applications will be reached by the chief inspector.

"The minister made it clear to his officials that no political or other outside interference will be given any consideration."

It is reported that F. T. James, of Toronto, will establish a fish freezing plant at Cowichan Bay, Vancouver Island, and ship salmon east to be distributed through his Toronto house. The granting of the license was opposed by the angling fraternity. Sport, and the tourist traffic, should have but little say in these days of urgent necessity in food production.

The Source of Capable Seamen

By J. J. HARPELL.

One of the questions which is much to the fore just now is how the United States is going to handle her immense new merchant marine fleet when it is built. While she is content to have her vessels operated by foreign crews, there is little need for worry because the tonnage that has been destroyed has left a surplus of capable seamen, who, together with a regular supply of trained men that are constantly coming forward from Great Britain, Norway, Japan, Canada, Newfoundland, Iceland, Denmark and the Netherlands, are quite sufficient to handle the product of even a much larger programme of shipbuilding than the allied countries have now under way. But there is a growing feeling on the part of the American public that United States vessels should be manned by United States citizens.

Writing in the February issue of the *Pacific Marine Review*, Mr. H. E. Pennell, President of the Coast Shipping Company, observes:

"Owing to the fact that matters marine have so long been considered of small moment in the United States, a general knowledge concerning them is universally lacking. To be sure the large problems of financing, routing, etc., being akin to others of like character throughout the world, will be readily grasped and solved by men of finance, experience, and able minds. It will be the commonplace, everyday problems of detail, so essential to the successful conduct of the enterprise as a whole which will need most careful and wise consideration and adjustment. It is the human phase of the shipping industry which will determine its success. Without men, ships cannot be operated. Hence the man status in connection with the operation of ships is of paramount importance, and must be carefully, unselfishly and wisely considered. One matter of great importance will be the source from whence to recruit men and how best to go about it."

With this premises Mr. Pennell develops an argument calculated to place the blame for the scarcity of United States seamen at the doors of the seamen's Unions, and this view seems to be generally supported by the American press. But does not the cause lie deeper than this and "being akin to others of like character throughout the world," cannot some light be thrown upon its solution by the experience of other countries?

The Source of Maritime Power.

This same problem of providing competent seamen presented itself on another memorable occasion, namely, when the Kaiser decided that the future of the German Empire lay upon the sea. On this occasion much careful thought and investigation was given to this same question. After a careful examination of all the factors necessary to maritime power, the German authorities decided that more depended upon the existence of an active deep-sea-fishing industry than upon any other consideration and proceeded at once to build up such an industry in the Fatherland. Up to that time the per capita consumption of deep-sea fish in Germany was exceedingly small, and, small as it was, less than 15 per cent of it was being sup-

plied by German fishermen. But it required but a comparatively few years of vigorous propaganda on the part of the German authorities and the blessing of the Kaiser to change this condition, so that by 1911 (the last year for which there are any authentic returns) Germany stood fourth among the deep-sea fish producing countries of Europe and was rapidly gaining a better position.

There is a closer relation between the fishing industry, shipbuilding and the operation of a merchant marine and a navy than is generally recognized.

"Sea fish," says Professor J. Russel Smith, in his volume, "Industrial & Commercial Geography," is considered the cause that first led men to sail upon the ocean, and from this beginning all maritime nations have had their rise. Such was the origin of the fleets of the Phoenicians and the Greeks. The Norseman, on the inhospitable shores of Scandinavia, developed fleets where man must fish or starve. The Dutchman, who wrested the commercial supremacy of the world's seas from the Portuguese had had years of maritime training on the banks of the North Sea. The fleets of England had their origin in these same fishing grounds, and later the New Englanders became the pioneers of America, because good fishing banks were near them."

The force of Professor Smith's observations can best be appreciated by an examination of the relation which the fish producing countries of the world bear to the maritime powers and more particularly to the nations that are now producing the most capable seamen.

The Principal Fishing Grounds of the World.

It is not generally known that the important fishing grounds of the world are only four in number, and that all four lie in the northern hemisphere, mainly north of the 40th parallel of latitude. The principal food fishes of the ocean frequent the shallow places of cool seas. The coasts of the Southern Continents are too precipitous to provide off-shore shoals and do not extend far enough into the Antarctic to secure the low temperatures required by the marketable fishes. The world must, therefore, look to the northern hemisphere for its principal supplies of edible fish.

In the order of their importance as regards production, the world's four deep sea fishing grounds are as follows:

Number One: Those lying off the northwest coast of Europe, including the North Sea, the Irish Sea and the Baltic.

Number Two: Those lying off the north-east coast of Asia, including the Sea of Japan.

Number Three: Those lying off the north-east coast of North America, including the Bay of Fundy, the Gulf of St. Lawrence, Hudson Straits and Hudson and James Bays.

Number Four: Those lying off the north-west coast of North America.

Fishing Ground Number One.

The war has necessarily interfered with the investigations that were being carried on by the Euro-

pean countries participating in the work of international investigation and exploration of the fishing grounds off the north-west coast of Europe, so that the latest authentic statistics concerning the fish production from this area is for the year 1911, as set forth in the eighth volume of the Bulletin Statistique. According to this report, the total quantity of fish landed in the various European countries in that year was 53,110,000 cwt. The production of the principal countries participating in this catch was respectively as follows:

Country.	Catch. Cwt.	Percent. of Total catch.
Great Britain	23,920,000	45.04%
Norway	13,641,000	25.69
France	3,574,000	6.73
Germany	3,131,000	5.90
Netherlands	2,620,000	4.42
Ireland	1,607,000	3.00
Denmark	453,000	2.00
Russia	453,000	0.85
Finland	277,000	0.52
Faroe Islands	240,000	0.45
Belgium	232,000	0.44

Of the total the principal areas which go to make up these grounds yielded as follows:

North Sea	44.8%
Norway and Polar Regions	24.7
Off the Coasts of Iceland	8.9
Off the North and West Coast of Scotland	4.4
The Skagerrak Straits	4.0
The Baltic Sea	2.7
Off the North and West Coast of Ireland	2.4
Off the West Coast of England and the Irish Sea	1.7

About one-half of the fish caught in these waters are pelagic fish, that is, fish that roam in schools near the surface of the ocean, such as herring, mackerel, sprats, etc., and about one-half are demersal or bottom fish, such as cod, haddock, hake, halibut, turbot, soles, flounder, etc.

The quantities of the principal kinds of fish landed at England in the year 1913 will give some idea of the relative quantities which each specie produces. These are as follows:—

	Cwt.
Herring	12,183,000
Cod	5,907,000
Haddock	2,294,000
Plaice	763,000
Mackerel	580,000

An idea of the equipment necessary to produce the British catch of fish may be had from the size of Great Britain's fishing fleet in 1913. This was as follows:—

Steam Trawlers	1,701
Other Steam Vessels	1,666
Motor Craft	1,382
Other Vessels	15,858
Total	20,607

The total number of men and boys regularly employed in the British fishing fleet is over 75,000, and those occasionally employed numbered over 25,000.

Fishing Grounds Number Two.

Complete statistics concerning production from the deep sea fishing grounds off the West Coast of Asia

are not available, but the total value of fish taken from this area in 1913 was approximately \$109,000,000. Of this, the Japanese fisheries are credited with \$75,000,000, and those of Russia and China with the balance.

Fishing Grounds Number Three.

The fishing grounds off the north-east coast of North America are fished over mainly by the fishing fleets of Newfoundland, Canada, and the United States. In 1913 the catches from these grounds were approximately as follows:—

	Cwts.
Newfoundland	5,600,000
Canada	5,400,000
United States	1,800,000

Fishing Grounds Number Four.

The fishing grounds lying off the north-west coasts of North America are fished over mainly by the fishing fleets of Canada and the United States, and in the year 1913 produced approximately as follows:—

	Cwts.
Canada	2,500,000
United States (including Alaska)	6,400,000

The principal fish producing countries of the world in the order of their importance are therefore as follows:—

	Which produces approximately tons per year.
Great Britain	1,200,000
Japan	900,000
Norway	800,000
United States	410,000
Canada	400,000
Newfoundland	280,000
Russia (including Finland)	250,000
France	172,000
Germany	168,000
Denmark (including Iceland)	160,000
Sweden	120,000
Holland	115,000

Relation Between Fishing Fleets and Seamanship.

Great Britain with a population of forty-five million people in 1913 had a merchant marine fleet aggregating over nineteen million tons, practically all of which was manned and navigated by British seamen.

Norway, with a population of 2,400,000 in 1913, had a merchant marine fleet aggregating 2,500,000 tons. Her vessels are invariably manned by Norwegian seamen and her seamen are also to be found in large number in the fleets of many other countries.

Japan is rapidly becoming the dominant factor in the merchant marine of the Pacific. Before the war the Japanese shipping in the Pacific represented 33 per cent of the total, but by the middle of 1917 it had increased to 55 per cent of the total. Her vessels are invariably manned by Japanese seamen who are also to be found in the fleets of many other countries.

The United States is a large producer of fish, but the greater part of it is made up of salmon and shellfish—branches of the industry that do not produce seamen, as these are largely fish which either inhabit the rivers and bays, or come up into them from the sea to spawn, when they are easily trapped, netted or dipped out with fish-wheels. The deep-sea and lake fisheries of the United States are comparatively small and account for less than 100,000 tons yearly. Moreover, many of her fishing vessels are manned by Canadians

Newfoundlanders and Scandinavians. The United States in 1913 had a merchant marine of five million tons, but the seamen navigating these were mostly English, Canadian, Japanese, Norwegian or Newfoundlanders. A recent statement of the registration of seamen sailing out of the United States ports discloses the fact that 74 per cent of them are foreigners; 9 per cent are naturalized citizens and only 17 per cent are native born citizens of the United States.

Newfoundland, in proportion to her population, is the largest producer of deep-sea fish, and proportionately the most important producer of capable seamen. But these seamen when they leave the fishing industry have to seek employment in the fleets of other countries, because Newfoundland is neither building or providing a merchant fleet sufficiently large to absorb them. Thus these excellent citizens and the beneficial influence of this citizenship are lost to their country.

Germany, in 1913, had a merchant marine aggregating a tonnage of about the same as that of United States; and, taking into consideration the special effort that she made during recent years to encourage German citizens to go into it and into the navy, also the fact that the native-born Germans in the German deep-sea fishing fleet is from two to three times the number of native-born United States citizens in the deep-sea fishing fleet of the United States, the percentage of native-born German citizens sailing out of German ports is proportionately equal to native-born citizens of United States sailing out of American ports.

In a similar manner the number of capable native born seamen that are being produced in France, Denmark, Sweden, Holland and other countries are proportionate to the size and importance of the deep-sea fishing fleets of these countries.

Canada, next to Newfoundland and Norway, possesses the largest deep-sea fishing fleet, proportionate to her population. It, however, does not bear the same proportion to the British deep sea fishing fleet which her total annual catch of fish would indicate, because, like the United States, the four hundred thousand tons above quoted include her salmon and shellfish catch. Her deep-sea fishing fleet is larger than that of the United States, and both on the Atlantic and Pacific is manned invariably by native born Canadians, who come mainly from New Brunswick, Nova Scotia and Prince Edward Island. But the Canadian deep-sea fishing fleet is still small as compared with her deep-sea fishing resources. In the past the fishing industry of Canada has not been sufficiently profitable to retain the services of the men who received their initial training therein, and the merchant marine of Canada has likewise not been receiving the attention it should, with the result that large numbers of Canadian seamen have had to look to other countries for profitable employment. They found it principally in the fishing fleets and merchant marine of the United States.

The Deep Sea Fish Resources of North America.

The grounds third in importance as regards production and development, but first as regards extent of area are those lying off the East Coast of Canada and Newfoundland. They comprise the Grand Banks, which alone cover an area as large as that of Great Britain. These banks are the largest deep-sea fishing shoals in the world. Lying just where the cold Labrador current rounds the south-east corner of Newfound-

land, these cool waters, with their abundance of food organisms that have been brought down from the Northern Seas, form the greatest cod fishing banks known. These grounds include also the Gulf of St. Lawrence, and the Bay of Fundy, as well as the shoals off the coast of New Brunswick, Nova Scotia and Newfoundland and Labrador. Furthermore, they are the grounds which produce the finest class of seamen. They are more exposed to the Atlantic than are the Dogger Banks of the North Sea. The weather is subject to more frequent and violent changes, and they possess the additional hazard of frequent and dense fogs. The quality of seamanship which these fishing grounds produce will be appreciated by the following account of their life and work, as set forth by Captain F. W. Wallace, Editor of the "Canadian Fisherman," in a volume now on the press:

The Bank Skipper.

"Few occupations call for more tact, resourcefulness, nerve and seafaring knowledge than that of the present day master of a Bank fishing vessel. They are in a class by themselves and the work calls for smart, intelligent and hardy men.

Most of the successful fishing skippers today are Nova Scotians and Newfoundlanders — the old time Cape Cod. Maine and other native born Americans having practically gone out of the American fishing fleets. Beginning as an ordinary fisherman, the skipper is generally a man who is ambitious and with enough determination in his make-up to tackle the worries incidental to the position. He applies for command of a schooner and it is up to him to "make good." To do this, he has to get a "gang" together to go fishing with him and as a rule he will enlist the services of former shipmates, relations and friends as it is no easy matter for a "green" skipper to ship men when there are so many successful skippers always looking for hands.

With a gang shipped, the green skipper has to prove himself a "fish killer" and bring in good "trips" of fish. If fish were to be got where ever the gear was set this would be an easy matter, but unfortunately they are not and the skipper has to use his head and find them. If he is a smart man and well informed as to the migrations of the scaly spoil, he will "strike" them and land a fare. If he is unsuccessful in catching fish, his gang are liable to leave him on return to port as they work on shares and poor fares mean but little money. A few bad trips mean "finis" for the ambitious fishing skipper as he will never get men to ship with him nor an owner to trust him with command of a schooner.

With so many independent men under his command, the skipper has to be a man of infinite tact. He cannot bully or brow-beat his "crowd" or use his authority in the same way as the officers in the merchant service. Fishing vessels have no articles and the men sign no papers of service. They ship to "fish and sail the vessel to and from the fishing grounds." They are under the Laws of Canada Shipping Act inasmuch as they must obey the just commands of the master in the navigation of the vessel. The tactful skipper never attempts to discipline the men — if he tried it they would leave him at the first port — but he has to exert his authority in such a way that he can get the work done without any appearance of "driving".

This calls for the exercise of a great deal of self-

restraint, patience and good humor. The successful skipper works the men hard — fishing days and nights without sleep — but he does it in such a way that they feel in no way "rushed."

All the work of navigating the schooner falls to him and the men look to the skipper for all orders in handling the ship. He has no mate to relieve him or take responsibility—the crew merely carry out his instructions in steering, look-out and sail handling. He has to be a man of nerve to drive the schooner to market in heavy weather: to navigate around a dangerous coast in fogs and winter snow storms, and to exercise all the tricks of seamanship in the various hazardous situations which are part of life at sea. In the fishing with dories, the men will be out in them and scattered over five miles of water. The skipper, cook and probably a spare hand are in charge of the schooner and the dories have to be carefully watched in case fog or sudden squalls shut down and separate them from the vessel. All the lives of the dory-men depend upon his vigilance and ability to pick them up should anything happen.

No matter how good a fish killer a skipper is, there are times when he will hit a prolonged streak of bad luck and the men begin to growl, as seafarers will. The skipper, however disconsolate he may feel himself, has to exercise his powers of good humor and keep up the spirits of the crew. Thus it will be seen that the position of master on a fishing vessel calls for men of more than ordinary virtues and ability.

In addition, he has to be something of a business man and keep track of the markets for fish and the seasons they are in demand. He has to be a hustler in procuring bait during the various periods in which it is to be procured cheaply and he has to plan out the fishing voyage as regards time and expenses in order that it shall be profitable to the owners and crew. Supplies and gear are generally purchased by him and he has to be fully cognisant of the various fishery laws and regulations which obtains along the ports, provinces and states of the Atlantic coast.

The Bank Fisherman.

The Bank fisherman, or the deep-sea fisherman as he is sometimes called, is of the finest type of worker. The fisheries offshore on the Banks call for hardy, courageous men able to stand the long hours of downright hard work which the fishery calls for and also the rigors of life at sea in all weathers. Most of them have to be born to the fisheries and have engaged in them since boyhood—very few men brought up in other environments can go Bank fishing.

The Maritime Provinces of Canada and Newfoundland breed the men who engage in the Bank fisheries of the present day out of home and United States ports. As mentioned before, the native born American does not go Bank fishing nowadays — the shore occupations have claimed the sons of the old time American deep-sea fishermen and United States vessels are largely manned by Canadians and Newfoundlanders with a few Englishmen and Scandinavians.

The Bank fisheries calls for strong men. There is no place for a weakling or a man troubled with nervousness. The work is hazardous and demands ability to cope with physical strain and nerve enough not to get frightened easily. The Bank schooner has to remain at sea often in the wildest of winter weather. Gales which play havoc with great ocean liners are rode out

by the little 90 ton fishing schooners and handling the vessel at such time call for hadihood and seamanship on the part of the crews. The dory fishing in which one or two men leave the schooner in small boats to set and haul their fishing lines is often attended with great danger. The sea may be smooth when the dories leave the vessel and may be lashed by a gale before they can get aboard again. Sudden snow storms and dense fogs are two hazards which the dory men have to tackle and it requires a knowledge of unusual seamanship and weather lore to escape destruction.

In spite of the hazards and the roughness of the life at sea in small craft, the work appeals to the Bank fishermen because of its independence and freedom. There is no one to "boss" and order them around except the skipper and he, as already explained, exerts his authority in a mild way. Master and crew work together in a co-operative manner and this policy and the freedom from discipline is the principle which keeps men engaged in an occupation which calls for more risks than the remuneration covers.

Besides being an expert in the work of fishing, rigging lines and gear, the Bank fisherman must be an able-bodied seaman as well. He must know the compass and how to steer by the wind or a course. He should be able to go aloft and handle a topsail; lay out on a bowsprit and furl a jib or on a boom end and haul out the reef-earring of a mainsail. A knowledge of the rule of the road is essential as he has to stand a watch and, in addition to being able to handle a schooner and her canvas, he must know how to splice and knot. Until he is an expert in pulling a pair of oars and handling those tricky yet wonderful boats called dories in all kinds of weather, he is not fit to go Bank fishing. As a small boat sailor, the Bank fisherman is the finest in the world.

The Atlantic Deep-Sea Fishing Ports.

The Bank fishery of the United States is carried on from the ports of Gloucester and Boston with a small fleet from Portland, New York and Provincetown. The Bank fishery of Canada is conducted principally out of Lunenburg, N.S., where a fleet of some 125 schooners engage in the salt fishing. Out of Digby there is a small fleet of eight or ten schooners which engage in fresh fishing. Yarmouth, Lahave, Lockport, Halifax, Canso, Hawkesbury and some ports in Prince Edward Island, New Brunswick and Quebec have a few schooners employed in Bank fishing.

The Bank Fleet's Season.

The great Lunenburg fleet engage exclusively in salt fishing — that is, all the fish caught are salted and after landing are dried and prepared mainly for export to Europe, the West Indies and South America. The Lunenburg craft fit out for the season's fishing in March and continue throughout the summer until September or the beginning of October. After that, the fleet is laid up for the winter, with the exception of a few large schooners which run with fish and lumber to the West Indies and return with salt from Turk's Islands.

The Spring fleet usually procure their herring bait from one or other of the freezers established in Nova Scotia ports and sails for the Banks around the 15th of March. They remain at sea until about the first of June when they return and land their fares at Lunenburg and sail for the Magdalen Islands to procure a

baiting of fresh herring which is plentiful then. With this baiting, or a baiting of caplin—a small fish which school in great number around the Newfoundland coast—the fleet fish upon the various Banks from Western to Grand from June to September. The Spring trip is generally a small one and the average catch for each vessel is about 1,000 quintals—a quintal being 112 lbs. The Summer voyage is the longest and the schooners may return with a fare ranging from 1,000 quintals to 2,400 quintals according to the luck and the weather. Most of the fish caught is cod with some hake, pollock, cusk and haddock.”

The Deep-Sea Fishing Fleet of the Pacific.

The fishing grounds of fourth importance in point of production, but third in extent of area are those lying off the west coast of Canada and Alaska.

Except for halibut, the deep-sea fishing on these grounds has had little or no attention. The halibut fleets of the Pacific fish out of Prince Rupert, Vancouver and Seattle.

The Deep-Sea Fishing Resources of North America and How They Might be Developed.

Proportionate to their resources the people of North America have made little progress in the development of their deep-sea fishing industry. This continent lies in the closest proximity to the two of the world's four deep-sea fishing grounds and her inland fisheries, comprising lakes as large as seas, are greater than those of any other country.

The road to the proper development of these resources lies along the following lines:

(1) The larger consumption of fish on the part of the people of the United States and Canada.

(2) The dissemination of more information concerning the fishing industry among the youth of the country.

(3) The establishment in the educational institutions of courses of study in pisci-culture, navigation and other subjects calculated to produce the expert knowledge necessary to the proper development of the fisheries and to make the industry profitable.

(4) The proper surveying of the deep-sea fishing grounds so as to make the business of harvesting these grounds less haphazard and more scientific as well as more productive and not so liable to loss of gear and other equipment.

An international commission, representing the United States, Canada and Newfoundland, should be appointed to do the work for the fishing grounds off the east and west coast of America which the International European Commission has been doing for the grounds off the north-west coast of Europe.

The Deep-Sea Fisheries is Capable of Much Increased Production.

Heretofore the interest which the people of the United States and Canada have taken in fish as a food has been allowed to develop in a most indifferent manner, with the result that there is a demand only for the few varieties of fish that happen to be best known or most easily handled in the kitchen. Many other varieties, equally nutritive and palatable, have been left uncaught, or if caught have been thrown back into the sea, because there was little or no market for them. This condition has left the business of deep-sea fishing generally unprofitable, and the few varieties of fish in demand high in price to the consumer. For the greater part of their catch, the deep-

sea fishermen of North America have had to look for a market in other countries.

Strange as it may seem, statistics have not been compiled by the United States authorities concerning the total catch and the quantities of each variety taken by the fishermen of that country. The same is also true of Newfoundland. So that the only complete available returns that are to be had are those concerning the Canadian catch. In the year ending with the 31st of March, 1917, the quantities of all kinds of fish—deep-sea, inshore and inland—taken by Canadian fishermen, together with the average price at port, of each kind were as follows:—

Kind.	Quantity.	Value.	Value per lb.
			Cts.
Cod (deep sea)	2,026,231 cwt.	\$ 5,449,964	2.68
Herring (inshore)	1,749,397 "	3,050,421	1.84
Salmon (inshore)	1,239,668 "	10,882,431	8.77
Haddock (deep sea)	582,028 "	1,711,271	2.94
Lobster (inshore)	480,898 "	5,508,054	11.45
Hake and Cusk (deep sea)	385,953 "	757,456	1.99
Sardines (inshore)	315,831 bbl.	1,481,261	4.69
Whitefish (inland)	164,992 cwt.	1,135,486	6.88
Mackerel (deep sea)	156,075 "	924,746	5.93
Pollock (deep sea)	143,306 "	268,756	1.87
Halibut (deep sea)	142,823 "	2,263,573	15.85
Pickeral (inland)	105,428 "	871,719	8.27
Trout (inland)	88,071 "	741,610	8.42
Pike (inland)	73,993 "	404,453	5.46
Alewives (inshore)	73,416 "	117,083	1.59
Smelts (inshore)	68,629 "	847,357	12.35
Tollibee (inland)	58,537 "	301,060	5.14
Clams and Quohogs (inshore)	54,942 bbl.	195,805	3.56
Caplin (inshore)	22,784 "	22,784	1.00
Perch (inland)	22,773 cwt.	114,656	5.04
Carp (inland)	22,303 "	56,543	2.53
Oysters (inshore)	18,361 bbl.	147,751	8.05
Dulse, crabs, cockles, etc., (inshore)	17,035 cwt.	53,917	3.15
Tom cod (inshore)	14,314 "	42,531	2.98
Albacore (deep sea)	13,906 "	48,684	3.50
Eels (inshore)	14,068 "	87,050	6.18
Oulachons (inshore)	12,900 "	68,449	5.39
Mulletts (inland)	10,802 "	21,604	2.00
Scallops (inshore)	9,460 bbl.	38,460	4.06
Catfish (inland)	9,392 cwt.	74,068	7.88
Swordfish (deep sea)	9,284 "	69,716	7.50
Shad (inshore)	8,365 "	63,645	7.60
Flounder (deep sea)	7,924 "	36,560	4.61
Squid (deep sea)	7,802 bbl.	36,977	4.75
Goldeye (inland)	6,605 cwt.	32,554	4.93
Soles (deep sea)	6,226 "	60,383	9.70
Sturgeon (inshore)	5,940 "	66,420	11.18
Dog fish (deep sea)	5,460 "	1,911	.35
Skate (deep sea)	2,982 "	8,643	2.90
Bass (inland)	2,481 "	29,329	10.94
Octopus (inshore)	161 "	2,012	12.49
Muskinonge (inland)	93 "	982	10.53
Whiting (deep sea)	87 "	1,087	12.50

From this table it will be seen that the most expensive fish to produce is the halibut. Yet this is the fish for which there is the greatest demand. It is the most difficult fish to catch and this difficulty is ever increasing, by reason of the fact that the specie is becoming scarcer. In fact, the halibut is disappearing so rapidly from the fishing grounds, that the United States and Canada are considering some international agreement with a view to protect them. The production of halibut has long since dwindled to small proportions on the fishing grounds off the northwest coast of Europe and the northeast coast of Asia. The production from the grounds off the northwest coast of North America is also small, so that the demand in the world's markets for this fish must be largely satisfied by the supplies from the deep-sea fishing grounds off the northwest coast of North America. The quan-

tity taken by Canadian fishermen off the Atlantic and Pacific coasts during the last five years was as follows:

1912-3	282,658 cwt.
1913-4	256,096 "
1914-5	239,920 "
1915-6	226,151 "
1916-7	142,823 "

Out of the total annual production in Canada of all kinds of fish from both the Atlantic and the Pacific and her inland fisheries of 8,170,000 cwt. the halibut accounts for only 142,823 cwt. Yet everybody seems to want halibut.

Salmon is the next most expensive fish, particularly when purchased fresh out of season, which means the greater part of the year, because salmon are plentiful only while they are going up into the rivers to spawn. This spawning season is never longer than a few weeks at any one point. At this time the salmon are taken in large quantities and canned. The low prices paid for them at this time of the year tends to bring down the average for the season to the figures given in the above table. There are several species of salmon on the Atlantic and Pacific Coasts and inland lakes, and fortunately the species do not all spawn at the same time of the year. At certain times of the year out of the spawning season the few stray salmon caught with a hook and line, or in a net, will sell as high as \$1.00 a pound.

The smelt is the next most expensive fish for the reasons that the demand is large, they are an expensive fish to produce, they can be caught only at certain times of the year, and the total production is not large. The same is also true of whitefish, trout, bass, pickerel, dore, catfish, swordfish, soles, muskelonge, whiting and sturgeon. The octopus, or devil-fish, also sells high, because the demand, particularly among the Oriental people, is much greater than the supply. They are caught mainly on the Pacific Coast where they are generally consumed by the Chinese and Japanese.

The cheap fish are cod, haddock, hake, cusk, pollock and skate. These are cheap, not because they are less nutritive or less palatable, but for the reason that they are most abundant, easily caught and may be had at any time of the year, weather permitting. The herring is also a cheap fish because so abundant. It is the most prolific food fish in the ocean and especially plentiful off the northeast and northwest coasts of America. But unlike the cod it cannot be had at all times of the year. There are certain seasons when the herring appear in great numbers off the shores and at these times the quantities taken are limited only by the equipment for catching them, the cold storage and curing facilities for taking care of them and the demand in the market.

All the above mentioned cheap varieties are deep-sea fish and the deep-sea fisherman could produce many times their present catch if the consumption among the people of the United States and Canada was only increased accordingly.

If the people of the United States and Canada wish to become a maritime power, they should pay more attention to the development of the deep-sea fishing resources, with which nature has so lavishly endowed the shores of this continent.

FISHERMEN PROTEST ONTARIO GOVERNMENT'S FIXED PRICES.

The Editor,

The Government proposal to commandeer 20 per cent of the fish caught in the Province, at prices fixed by the Government, is a step in the right direction, but, in its desire to supply the commodity at the lowest possible price the Government is about to deal unfairly with at least a section of the fishermen. I do not presume to speak for all the small fishermen, but as secretary of the local Fishermen's Association I am authorized to present the case for the men in this community.

In these parts the principal catch is trout. The Government has decreed that eight cents per pound, f.o.b. cars, boxed and iced, is a fair price for this class of fish, but how they arrived at this estimate is difficult to understand.

According to the Globe, the cost of living has increased since 1914 over 50 per cent. The cost of production has gone up during the same period: Gasoline, 112½ per cent; nets, 70 per cent; corks, leads, etc., 160 per cent; labor over 50 per cent. In 1914 the fishermen could command six cents per pound for trout; in 1917 the prices ranged from 7¼ cents on the dock, without boxes or ice, to 10 cents, boxed and iced. Taking the highest price paid during 1917—without considering either the cost of boxes or packing—the increase to the fishermen since 1914 amounts to only 33 1-3 per cent, and in most cases is nearer 25 per cent.

The cost of production has increased to, roughly over 100 per cent, and the cost of living over 50 per cent, and to meet this the producer is only getting a bare increase of 25 per cent. The cost of production will be greater during 1918, yet the Government propose cutting the price, instead of purchasing it.

To meet the Government requirements, the fishermen will be required to provide boxes, pack the fish in ice, and deliver them f.o.b. cars. As this community is 60 miles from a railway station, the men will presumably have to pay freight of 50 cents per cwt. to the nearest railway centre. And the Minister of Public Works and Fisheries announces that they will be better off than last year! Of course, the fisherman still has 80 per cent of his catch to dispose of as he pleases, but if the Government cut the prices, the tendency will be for the outside markets to follow suit.

Fishing is a hazardous game. It is also an expensive business, as a gang of nets seldom lasts more than two years, and is often destroyed by bad weather the first year. Then there is the yearly bill for repairs to nets, which is by no means inconsiderable. To reduce the cost of living is a laudable ambition, but to do so at the expense of the fishermen, who are already suffering from the increased cost of production, is ambition run mad.

JOHN MACARTNEY,

Secretary.

Tobermoray Fishermen's Association, Tobermoray,
January 28.

The Independent Boat Owners' Association of Prince Rupert want a herring trap established at Pearl Harbor near Port Simpson, B.C. This, they claim, would relieve the bait situation for the halibut fishermen, and the pressure on the Rupert Cold Storage during the winter.

Practical Fish-ways



Meziaden Falls and Fish-way, Naas River watershed, British Columbia.

The above illustration shows the falls in the Meziaden River, a tributary of the Naas River, in British Columbia, and the fish-way constructed for the Dominion Government by the Fishery Department of British Columbia at cost of fifteen thousand dollars.

The Meziaden River is the largest tributary of the Naas River. At the falls the river is over four hundred feet wide. It is the outlet of one of the two largest lakes in the Naas watershed frequented by sockeye salmon. The falls shown above have a drop of over ten feet. During high stages or ordinary stages of water salmon had little difficulty in passing over. During seasons of low water the fish had great difficulty in making the ascent and many failed to do so. In ascending the Meziaden River the salmon approach

feet at low water. The up-stream or exit end of the fish-way has a width of 20 feet and a depth of 3 feet at low water. On entering the fish-way the salmon pass from one basin to another heaping over a 2 ft. fall. To prevent drift from entering the fish-way a wing-dam of logs and rocks was built at an angle of 45 degrees to the bank and some fifty feet above the exit. Openings through the wing-dam permit the fish to pass through. The channel of the fish-day, its entrance and exit having been cut through solid rock and its cross walls made of re-enforced cement, the work is permanent and affords for years to come an easy and safe passage for the ascent of the vast numbers of sockeye salmon that annually seek the spawning beds above the falls. The fish-way was designed and built by John P. Babcock, the Assistant to the Commissioner of Fisheries for British Columbia.

The fish-way at the dam at the outlet of Quesnel Lake, in British Columbia, is one of the most important in that province.

Quesnel Lake is the source of Quesnel River, one



The Fish-way of Quesnel Dam, showing construction.

of the largest and most important salmon frequented tributaries of the Fraser River. The lake itself is the second largest lake in the Fraser watershed. Its gravel beds and tributary streams afford extensive spawning areas for sockeye salmon. The dam at the outlet of Quesnel Lake was built in 1898 for the purpose of draining the river for mining. The dam is constructed on the segment of a circle having a radius of 460 feet, is 18 feet high, and from abutment to abutment is 763 feet long. At the north end of the dam is constructed a race 124 feet wide by 382 feet long, with a gradient of only six inches. At the head of this race are nine 12 foot discharge gates through which the ordinary overflow of the lake is carried off. The water in the race varies in depth according to the season, but at the time of the sockeye salmon run (August and September) it averages four to five feet in depth, and has a velocity of twelve to fourteen feet per second.

A fish-way was built in the race by constructing a wall of hewn timbers running parallel with and twen-



The Fish-way at Meziaden Falls, Naas River watershed, B.C. The cross timbers shown brace the retaining wall to prevent ground from filling the basins.

ed the falls along the left bank of the stream (the right bank shown in the illustration.) The entrance to the fish-way is shown on the right of the illustration. The bank on that side consists of bed rock with a strata of gravel on top. The fish-way has a length of 126 feet, a width of from 25 to 30 feet, and is divided into five basins or pools by cross walls of re-enforced cement, beginning at the head there is a drop of 2 ft. between each basin. The entrance is located at the foot of the falls, where previous to its construction the fish congregated before attempting the ascent. It has a width of not less than 25 feet and a depth of 6

ty-six feet from its eastern wall. On the floor of the race between these walls, at each twenty-five feet of the entire length of the race were placed hewn timbers three (3) feet high extending from each wall upward, and at an angle of 45 degrees and meet in the centre, constituting a cross-wall or riffle which retards the flow of water and causes a series of counter currents so as to permit the fish to easily pass through it. The entrance to the fish-way is at the point where the fish find their progress arrested by the dam.

The fish-way was built by the British Columbia Government in 1903 at a cost of four thousand dollars, upon the design of John P. Babcock, the Deputy Fisheries Commissioner of that Province.

All the salmon which enter Quesnel Lake pass through this fish-way. They cannot enter the lake otherwise. As the waters which flow from the lake



Looking up the race at Quesnel Dam, showing the construction of the fish-way on the floor of the race. The gates being closed.

are clear, and at the head of the fish-way perfectly placid, the salmon entering can be distinctly seen by one stationed there. Every season since the fish-way was constructed the Provincial Government has stationed a watchman at the dam during the salmon run to prevent anyone catching them in or below the fish-way, and to note the size and duration of the run. The daily records kept of the run of salmon at this point illustrate the importance of the fish-way and also the vast numbers of salmon that have reached Quesnel Lake in "the years of the big run." By a system of counting it was shown that between August 5th and 31st, 1909, over four million of adult sockeye salmon passed through this fishway.

A CARLOAD OF FISH DIRECT TO FARMERS.

A carload of fresh frozen haddock and codfish from Nova Scotia, packed in 200-pound boxes, will arrive in Petrolia early this week, and be sold in unbroken boxes at 9c per pound, at any point in the county of Lambton. This enterprise is to help out the meat conservation idea. It is made possible by the Ontario Government co-operating with the food controller's office at Ottawa, and through the agricultural representative for Lambton, W. P. Macdonald, arranging with the Farmer's Co-operative Clubs to distribute the carload. This is the first car of fish ever imported into Ontario and handled in this way.

REGARDING NEWFOUNDLAND AND THE SERIOUS CONSIDERATION OF GREATER PRODUCTION.

By M. McLAREN.

Recently the newspapers stated that the food situation in Newfoundland was becoming serious. The press further reported that cattle and other stock were suffering from lack of grain, etc. Therefore the situation in the ancient colony is grave enough to merit her people's earnest consideration, and it is to her fisheries that Newfoundland will now as never before owe her existence, if thought of the help to be got in that direction is directed into the right channels.

Some years since a test was made of the soil of the Island. An eminent authority stated that Newfoundland was capable of developing a food supply large enough for self-sustenance. Garden stuffs, and root crops will grow luxuriantly in the short summer.

The supply of animal fertilizer in Newfoundland, because of the scarcity of cattle is not great. The demand of the present, that every person must cultivate all the land they can, makes it plain that in Newfoundland, as well as in Canada, the question of waste in the fisheries could be considered with profit to the colony. Speaking of the fisheries three centuries ago, Lord Bacon described them as being "richer than all the gold mines of Peru," and to-day they are the greatest fisheries in all the world, therefore in no place in all the world can there be a greater amount of fish waste than in Newfoundland. To supply her own foodstuffs, the ancient colony must have fertilizer, and this demand can be supplied as in Canada, by consideration and conservation of the wasted by-products of the fishing industry.

There is more in the fish waste than oil, skin and bone. Stock and poultry will flourish upon the discards and the island will blossom even as the rose upon the application of "Marine Fertilizer," which every farmer knows contains the necessary chemical properties for the production of all varieties of crops. Britons everywhere are putting forth every effort to win the war, and some arid parts of the Empire would doubtless be glad to buy from Newfoundland the conserved fish waste in order to enrich the stony soil, and, putting it under cultivation, reap its quota of foodstuffs and grain to swell the empire's resources.

NEW FOOD CONTROLLER A FISH MAN.

Mr. Henry B. Thomson, Canada's Food Controller, was associated with Mr. F. T. James and Mr. Sanford Evans on the personnel of the B. C. Salmon Fisheries Commission which investigated conditions in District No. 2 last summer. Mr. Thomson is well acquainted with fishery matters on the Pacific Coast, and is a man of strong personality and organizing ability. Into the Food Control, he is bringing to the fore much of the virile and forceful way of doing things which characterized him on the Pacific Coast. Mr. Thomson is Irish, stands six feet three, and broad in proportion, and was a member for Victoria in the B. C. Legislature for ten years. A message from him to the fishermen of Canada appears in this issue.

To The Fishermen of Canada

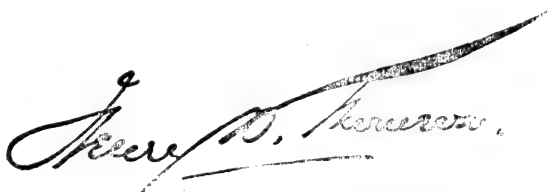
There is no necessity for me to emphasize the seriousness of the food situation at the present time. The published reports from the Allied Countries describing the scarcity of food stores; the institution of bread and meat cards and compulsory rationing, have been given due prominence in the Canadian Press and every Canadian is aware of the distressing conditions which exist across the Atlantic.

Food will win the War and every Canadian must do his or her bit to attain the common object. Neglect, carelessness and failure to observe the simple regulations imposed and requested by the Canadian Food Control only postpones the day of final victory and lengthens the arduous service of our fighting men. To bring them home from the trenches and the fighting ships as quickly as possible is our first duty.

To the fishermen of the Atlantic, Pacific and Great Lakes, I would urge that every effort be made to increase the catch of edible fish. Waste no time in idleness. Every pound of fish landed will be consumed on this continent and a pound of beef or bacon released for shipment overseas. The fisherman who keeps hard at work fishing is helping to win the war. The fisherman who wastes time is helping the Germans.

In the fish camps, on vessels, and in your homes, the fisherman can also help by saving food. Eat more fish and less meat—especially beef and bacon. Eat less white-bread and pastry made from white flour. Use more corn-meal, oat-meal and war flour. Owners, in fitting out vessels, can assist by encouraging the use of substitutes for beef, bacon and flour on the fishing craft.

Produce and save is the keynote of my message to Canada's fishermen. This double duty imposes no great hardship. In your work, let your efforts be vigorously strengthened by the undeniable fact the **FOOD WILL WIN THE WAR.**

A handwritten signature in dark ink, reading "J. D. Cameron". The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Ottawa, February 20th, 1918.

Food Controller for Canada.

Steam Trawling for Canada

Major Hugh A. Greene, Director of Fish Supplies for the Overseas Canadians and the British Board of Trade, and the man who inaugurated the huge export shipments of Atlantic frozen fish to Great Britain, states that Canada's Atlantic fisheries are but feebly developed.

"We're only scratching at our fishery resources in this country," he stated recently. "The Grand Banks off the Newfoundland and Nova Scotia coast are the greatest fishing areas in the world to-day. They are ten times the size of the North Sea fishing grounds, and more prolific in cod, haddock and other fish, yet the Dogger Bank has been fished by steam trawlers from Great Britain, Germany, Belgium, Denmark, Holland, Norway, Sweden and France for thirty years, and has produced incalculable quantities of fish foods in that time. Before the war, there were a thousand steam trawlers and drifters fishing in the North Sea and landing big catches. How many steam trawlers are there fishing out of Canadian ports on the Grand Banks to-day? I blush to say it, but there are two fairly modern craft and one small vessel. However, another vessel is being added to our fleet, and that will make four all told. Just think of it! Four trawlers in a country which has been fishing for three hundred years; which was colonized by fishermen, and whose inducements for colonization were primarily fish and fur.

If we'd have got wise ten years ago, we should have at least one hundred trawlers fishing by now on our Atlantic coast. We could now be supplying England and the United States with millions of pounds of frozen sea fish weekly, and the salt fishermen could catch as much fish with one trawler as they can catch with ten fishing schooners in a season.

Gentlemen: We have more fish around the Canadian coast than they ever had in European waters, but we've been asleep for years. What other country is there with any fisheries in the world to-day that carries on with sailing vessels and hooks and lines? Trawlers are used everywhere in greater numbers than in Canada. Great Britain, France, Holland, Germany and Scandinavia has them by the hundreds. Spain and Portugal have their trawler fleets. Japan had them years ago. Our sister colonies of South Africa and Australia had them long before Canada ever thought of steam trawling. The United States has about twenty that come up and fish on these banks lying right off our own coasts, and all this has been going on while our hook and line fishermen were sending petitions in to Ottawa to prohibit steam trawling, as it destroyed fish spawn and raked up the fishing grounds.

The North Sea has been gone over like a Western wheat field for over thirty years, and there is as much fish in it to-day as there ever were. The Royal Commission on Steam Trawling, which investigated the effects of steam trawling over there entirely exonerated trawling from ill-effects, and proved that there was no depletion in the fisheries whatever, in spite of the fact that the fleets were increasing yearly.

Canada's big steam trawling field is on the Atlantic banks. The Pacific fishing areas are not so large

nor so favorable for the operation of this kind of fishing. They are also too far away from the British markets for the present overseas trade. The cost of operation is also too high—the fishermen demanding too much remuneration for their work.

This is entirely due to the high prices set by the halibut fishery, and this scale will have to be adjusted if Pacific ground fish are ever going to be marketed. The steam trawler will operate very successfully in the ground fishery on the Pacific, but the market will be confined to this continent only, and it will have to be cheap fish if it is going to compete with the Atlantic fish. When the halibut fishery is depleted, or restricted to prevent depletion, the Pacific fishermen will have to use the steam trawler to catch the other varieties of fish. The hook and line fishery is too expensive, and is no good for catching soles, flounders, and other bottom flat-fish.

On both oceans, steam trawling is the only logical manner in which the fisheries can be developed. It is up to us to get busy and get in on the game."

EXTENSIONS IN THE TRADE.

A. H. Shearman, president of the Defiance Packing Company with canneries on English Bay and at Port Renfrew, is going into the packing of herring on a large scale as a supplementary adjunct to his canning of salmon. He believes that the canning of fish can be kept up almost the whole year round if the different varieties of fish to be found in B.C. waters are utilized. A continuous canning industry in B.C. would not only give permanent employment to workmen, but would add materially to the economic wealth of the province. He is putting up the herring in tall cans especially enamelled, making a very attractive package. He employs only white labor, both in the cannery and on the fishing grounds, and aims to collect about his plants a white population that will be loyal to the industry. Last year he made several improvements to his canneries and has added a large fish-carrier to his equipment. This year he plans to have four new seine boats more, so that he will be self-contained so far as supplies are concerned. He says that the Henderson patented process for preserving fresh fish has been demonstrated a success, and he looks to see it play an important part in the policy of increased production of fish for Canada. Mr. Shearman is a Britisher to the core, and has offered his patent rights to the Canadian Government free, to be used as it sees fit in the interest of the Allied cause.

GULF OF ST. LAWRENCE FISHERMEN CUT OFF.

Owing to the sale of the steamers "Percesian" and "Gaspeian," the fishermen of the North and South shores of the Gulf of St. Lawrence are cut off from marketing their fish in a fresh condition in Quebec. Steamers to take the place of those sold are practically unprocureable at present. An auxiliary schooner may be procured for the service, but if no transportation facilities materialize, a valuable supply of salmon, halibut, cod and other fish will be lost and the fishermen will suffer.



E. LAPOINTE, Ottawa
Director of Canadian Fisheries Association



C. F. MORRISSEY, Tignish, P.E.I.
Director of Canadian Fisheries Association



Correspondence

Fort William, Ontario,
January 26th, 1918.

Editor, Canadian Fisherman:

Dear Sir,—As a member of The Canadian Fisheries Association I protest against the policy of the Fisheries Department of Ontario.

Without making any inquiry as to the cost of production, at least in our district, they say before granting you a license you will have to sign an agreement to sell us at a price, to be set later, 20 per cent. of your catch iced and boxed and shipped on cars at point of shipment, whenever demanded, at a maximum of 8 cents per lb. for trout and whitefish.

It is well known that trout is the principal fish caught in Lake Superior in the summer season, and owing to the scarcity of that fish in some localities and the great advance in the price of fishing material and wages, tugs operating last season in those districts lost money at nine cents per lb. on production alone. Add to this, cost of box, ice and shipping, $1\frac{1}{4}$ ¢ per lb. brings last year's cost to $10\frac{1}{4}$ cents per lb. on board cars, without any profit to the operator.

At the present time we do not know what wages or fuel will cost, but we know wages will be higher and coal may not be had at any price.

Material such as linen nets, cotton lines, and twines, and rope are in some instances fifty per cent. above prices of last year and a fair estimate of prices this year for trout at the head of Lake Superior is a minimum of eleven cents on board cars.

If you have any doubts of the above figures get the Head of the Lakes branch of the Canadian Fisheries Association to investigate this matter.

If the Fisheries Department of Ontario intend to curtail production and ruin this industry—the summer fishing on Lake Superior—I must congratulate them; they are certainly taking the most effective steps.

The net result of this measure will be the fishermen of our district have to look to other sources of employment which are a great deal more remunerative to-day than fishing, consequence no fish. The next result, men who have invested their life earnings in the business find themselves ruined as no market is left for their boats, nets, etc. Thinking men will ask the question, why is the Fisheries Department of Ontario tinkering and making such a mess of such an important department and the answer is well known to those in touch with the situation.

They entered into the fishing business as wholesale distributors in competition with the well known and tried machinery used in distributing fish between the producer and consumer. They entered this game holding the joker in the shape of Lakes Nipigon and Nipising, where they screwed down the producers to the lowest limit, did some big and free advertising of the benefits to be had in dealing with the Fisheries Department for fish, but everything did not turn out as expected; they could not compete with private managed concerns and make it a paying proposition.

They reconsidered the matter and it looked easy. The province owns the lakes and fish we will compel the fishermen to harvest at a price cheaper than he can or will sell to our competitors; we then have our competitors coming and going.

Good reasoning, but here was the results. Last fall all the inland lakes of Ontario were taken from under

license and fishing permits were only granted under contract that the Fisheries Department of Ontario were to have the fish, trout and whitefish, to be boxed, iced, etc., free on board the cars, for $8\frac{1}{2}$ cents per lb.. Very few contracts were taken up, the price being too low.

The ruling was recinded and licenses granted, but too late, the ice was heavy and fishermen would not start so late in the season; consequence, not half our usual quantity of winter caught fish in Northern Ontario.

Now to bolster up their next activities they are trying their prentice hand on the Great Lakes fisheries, with what eventually will be the same result.

There are no words in our English language strong enough to condemn this vicious Prussian system where a hard working class, who ask no favors but justice, should be ground down by an unpractical Department of a Government, who to bolster up a new venture, sees no wrong in running an industry.

This Department, while taking up a line of business under conditions where a private concern would make a fortune are too shrewd to invest in the production end but leave private interests to take up that end and confiscate 20 per cent. of his harvest at \$60 per ton less than cost, and ruins the market for the other 80 per cent. by computing against him with the proceeds of this confiscation.

It should, indeed, be a paying proposition and it requires no brains to make it so.

The food control have been appealing to the fishermen of the Dominion to use their best efforts in the interest of production and the fishermen have signified their willingness to do their share, but in all justice they expect an adequate return for their work and investment and will expect the food controller if he wishes the usual quantity of fish from the Great Lakes to take steps at once to quash a greater crime than the action of any trust. I remain yours,

Sincerely,
FISHERMAN.

JOINT ACTION ON THE FRASER RIVER.

Representatives of the salmon cannery of Puget Sound and of British Columbia, will meet shortly to discuss the need of taking drastic measures to conserve the sockeye salmon of the Fraser River.

The imitation for an international conference between the cannery of the United States and those of British Columbia has been given by the salmon cannery of Puget Sound in a letter addressed to Col. F. H. Cunningham, Chief Inspector of Fisheries of Canada, with offices at New Westminster. That letter is as follows:

Seattle, Washington, January 10, 1918.

Hon. F. H. Cunningham,
Chief Inspector of Fisheries,
New Westminster, B.C.

Sir,—A meeting of the Washington Fisheries Association was held in its office, No. 2604 L. C. Smith Building, Seattle, Washington, on December 18th, 1917. Practically the entire fishing industry of Puget Sound was represented at said meeting. There were also present a representative of the United States Bureau of Fisheries, Mr. L. H. Darwin, State Fish Commissioner of the State of Washington, and Hon. W. A. Lowman, of the State Council of Defence.

A very full and earnest discussion of the salmon

industry on Puget Sound took place. It seemed to be the opinion of all persons present at said meeting that some action must be taken without delay looking towards the protection and perpetuation of the Sockeye Salmon Industry.

As the fishing industry of Puget Sound is so closely taken and that, as a preliminary to such joint action, Columbia, naturally a consideration of the Sockeye Salmon industry on the Fraser River took place, and it was thought advisable that some plan looking towards the adoption of joint, or at least identical, regulations should be formulated. The members of the Association felt that some joint action, should be taken and that, as a preliminary to such point action, a committee should be appointed representing the fishing industry of Puget Sound and that a similar committee be appointed representing the fishing industry of British Columbia, and that these two committees should meet and consider the best procedure to be followed in order to protect and perpetuate the sockeye salmon, for the benefit of both the State of Washington and the Province of British Columbia, and their respective inhabitants.

The following resolution was introduced and unanimously adopted:

BE IT RESOLVED: That a committee of nine be appointed to meet with and confer with a committee of the Fraser River Fisheries to consider, and, if possible, arrive at a joint understanding as to measures to be recommended to the proper legislative bodies for the control and regulation of the fisheries of salmon for the Fraser River District Fisheries on both sides of the International boundary and the off-shore fishing at the entrance of the Straits of Fuca, and that this Committee be instructed to use all efforts to arrive at a naturally satisfactory and equitable understanding to the end that the salmon industry in the above district be preserved for all time, and not destroyed or put out of commission.

Under the provisions of the foregoing resolution a Committee was appointed consisting of the following named persons:

Hon. Will A. Lowman, Member State Council of Defence; Hon. L. H. Darwin, State Fish Commissioner; Hon. Miller Freeman, Commander N. M. W.; Daniel Campbell; Frank A. Twitchell; J. C. Morris; E. S. McCord; E. A. Simma and R. A. Welsh.

The Committee immediately organized and a sub-committee was appointed, consisting of the following named persons.

Hon. Will A. Lowman; Hon. E. C. McCord; Hon. Miller Freeman, Commander, N.M.W.

This sub-committee was directed to communicate with the representatives of the fishing industry of British Columbia and suggest the appointment of a similar committee to represent the fishing industry of British Columbia, and further to arrange for a conference between such committees when the British Columbia committee shall have been appointed.

We were somewhat at a loss to know whom we should communicate with in regard to the initiation of the proposed conference, but in as much as you are the representative of the Fisheries of the Dominion of Canada for the Province of British Columbia, we felt that it was proper to address this communication to you, and we trust you will call a meeting of the representatives of the fishing industry of British Columbia and see to the appointment of a committee similar to the one appointed by the Washington Fisheries As-

sociation; and that at some convenient time and place, to be selected by you, a conference be had between such committees and the entire subject fully and thoroughly discussed.

We feel that some action should speedily be taken or the sockeye salmon industry will become greatly depleted. All members of the Association were extremely earnest in their opinion that some immediate action should be taken and some plan worked out that will accomplish the purpose desired, viz.: The protection and perpetuation of the industry.

We, the sub-committee, therefore, most respectfully request you to communicate with us at 2604 L. C. Smith Building, Seattle, Washington, and give us the benefit of any suggestions that may occur to you.

We desire to work in entire harmony with the representatives of the fishing industry of British Columbia, and feel assured in advance that you and your people will also desire to co-operate with us in the laudible efforts to preserve the great sockeye salmon industry.

Most respectfully,

Committee,

Signed by WILL. LOWMAN.

MILLER FREEMAN.

Col. Cunningham passed on this letter to W. D. Burdis, secretary of the B. C. Salmon Cannery Association, Vancouver, and a conference on its subject matter was held here on January 15, when the following cannery were represented in person or by proxy: Messrs. W. H. Barker, R. G. Woods, B. C. Ness, R. J. Johnston, R. C. Gosse, Dr. Bell-Irving, James Anderson, A. H. Sherman, G. A. Buttmer, D. McPherson, F. E. Burke and F. T. Cliffe.

It was stated that as fishing regulations are under state and not federal control, any arrangements made in Washington, D.C., would have to be notified by the legislature of Washington State.

It was also pointed out that a federal commission from Ottawa is now in Washington, D.C., considering the conservation of the sockeye supply of British Columbia.

It was agreed by the meeting that a conference between the Puget Sound Cannery and the British Columbia Cannery be held and that the Hon. Will. Lowman be communicated with.

It was decided to appoint a committee of the whole Fraser River Cannery and a sub-committee of six to deal with the matter when the conference in Vancouver could be arranged. The sub-committee consists of Messrs. W. H. Barker, R. C. Gosse, D. McPherson, C. F. Todd, Dr. Bell-Irving and James Anderson.

REPORT OF SUB-COMMITTEE ON FISH.

Vancouver, B.C., January 2nd, 1918.

Hon. W. J. Hanna, K.C.,
Food Controller of Canada,
Ottawa, Ont.

Sir,—Greater production of fish for food from Pacific waters. First in order to substitute fish for beef and bacon, and secondly to create a market for the less known, but plentiful ground fish. This, I take, is the aim of this sub-committee.

Because bacon and beef are sorely needed by the Allied Armies, it is hoped that a more general substitution of fish for these foods can be brought about.

With this more general substitution will come a greater demand for fish, which may be partially filled by

the utilization of Pacific ground fish. In this way a new source of food supply will be rendered.

Substitution of fish for beef and bacon in the first instance depends on the price the consumer has to pay. If fish approximates to the price of beef and bacon, only patriotic sentiment, a slender thread so far as food is concerned, will operate. If, however, fish is offered to the people of the Prairie Provinces as far East as Winnipeg at fair and attractive prices, the substitution of fish for beef and bacon will occur because it will pay the consumer; and in the last analysis self-interest is the ruling human passion.

After having conferred with Premier Brewster, Dr. Tolmie, Str. Planta, and Mr. Babcock, at Victoria, Mr. Babcock's report of your Fish Committee proposal did not meet with approval—particularly its recommendation that present conditions should continue and the fisherman be given $1\frac{1}{4}$ c per lb. for ground fish, however caught, and that a wholesale spread of price only be allowed on these fish before they reach the retailer, who will be expected to sell them from 11c to 12c per lb.

The objection to the proposal was, and is, that cheap fish will not be offered consumers. The easy part of the ground fish problem is the catching of the fish. The hard part is getting the people to use them. Price is the essential in this endeavor. The supply of ground fish is inexhaustible. It is only a question of putting on trawlers and operating them for cheap fish.

The Trawler, James Carruthers, of the Canadian Fish and Cold Storage Co., is available either to be operated by the Company or commandeered by the Department of Food Control along the lines herein suggested. An estimated cost of operation is appended to this letter, for your information, guidance and future action.

As to what method should be used in regard to the trawlers, it is necessary to bear in mind that the fish must be sold cheap to the consumer in order to create a market that will absorb the capacity catches.

From the appended estimate of cost of operation you will see that I have put aside \$6,000 a month for the use of boat and the Company's profit. I have also estimated that if the fisherman are given $\frac{1}{2}$ c a lb. they will average \$200 a month wages, with board. This, I think, is fair.

If, however, it is impossible to get the Union to furnish fishermen on these terms, then the Department of Food Control should ask for volunteers or conscript estimated that if the fishermen are given $\frac{1}{2}$ c a lb. the justified ground of a fair wage and the National interest.

This whole matter will not interfere with the long-line fishing or the dory-fishing in any way, and should be treated as a separate and distinct project by itself.

As to what is a fair price to the fishermen for catching ground fish from a trawler, it was agreed that $\frac{1}{2}$ c per pound and their board would be ample remuneration, as it would make an average wage of \$200 a month and board for each fisherman. If the fishermen were paid $1\frac{1}{4}$ c per lb. as the new Union scale runs, on a minimum catch of 400,000 lbs. per month or a maximum of 640,000 lbs. a month, they would make in wages from \$500 to \$800 a month with board.

The fishermen should receive fair wages, but not fortunes. How would \$500 or \$800 a month compare with the remuneration of Canadians at the front who draw \$1.10 and allowances a day, and who gave up

their lucrative employment to fight the battle of civilization while their dependents are left at home and are made to pay extravagant prices for their fish for food, to meet the demands of the fisherman, which demands would prohibit a large consumption of these fish.

It was recommended that ground fish caught by a trawl be put on the market at a price that will be attractive, namely, 2 lbs. for 15 cents, or 8 cents per lb. with the purchaser acting as his own delivery, which fact should be given prominence in the publicity campaign which we recommend be inaugurated. If the maximum catch of a trawler, namely, 160,000 lbs. a week or 640,000 lbs. a month is to be marketed, it will be necessary to carry on a rigorous publicity campaign of education, in order to create a consuming public to whom halibut, salmon and white lake fish, because of their high prices, do not appeal.

By operating another trawl another 640,000 lbs. a month can be obtained, so that the supply of this new source of fish food can always exceed the demand, which is not true of any other food supply in British Columbia. The attractive price of 2 lbs. for 15c. and 8c. per lb. for ground fish will be an inducement for the householder to substitute these fish for beef and bacon, and if this substitution can be largely affected greater supplies of beef and bacon will be available for export to the Allies.

Fishing with an Otter trawl in British Columbia is no new thing. It has been tried out and has been successful in obtaining large catches of great varieties of edible fish. Because there was no market up to the present for trawled fish, Otter trawling was not persisted in, and was considered a failure; although the fish were caught in vast quantities by it. It is necessary to create a new market for these trawled fish, therefore they cannot be looked upon as commodities on the same basis as halibut, salmon, and lake whitefish for which a market has already been established. Price is the chief ingredient in the creation of a new market for fish.

The catch of scrap or ground fish by a trawler consists of a great proportion of flounders caught in deep water, where a large trawler has to operate and these fish are always of good quality and superior to those caught in mud-flats.

We recommend that all the trawl caught fish be frozen, as in that state they will stand transportation and handling better than when shipped fresh on ice.

We also recommend that the method of catching ground fish by a trawl be begun at once, and that efforts be made to educate the people to use frozen fish.

Yours truly,

(Signed) JOHN WALLACE.

Spencers Limited Department Stores, Vancouver, told me that if I could lay ground fish down in Vancouver at $5\frac{1}{4}$ c a lb. they would put them on the market at 8c a lb., or 2 lbs. for 15c. They said that they would do this on the condition that the purchaser carried home his own parcel.

Vancouver, January 19, 1918.

The conservation of the Sockeye Salmon in the Fraser River is engaging the attention of the packers of British Columbia as well as the packers of Puget Sound. Also, the Commission of National Science

tific Research, at whose head is Dr. A. B. Macallum of Ottawa, has appointed a committee of scientists and cannerymen to investigate the problem. Furthermore, the Hon. J. D. Hazen, Chief Justice of New Brunswick, is now in Washington, D.C., representing the Canadian Government in conferences with the representatives of the United States Government, and this very problem, the sockeye salmon in the Fraser River is one of the questions up for international review. In the midst of so many investigations and commissions, because in the multitude of counsellors there is surely some safety, it looks as if the sockeye salmon will at last get justice, though the whole matter is in the nature of seeking the horse after it is stolen.

There is no unanimity in B. C. canning circles regarding the best method of conserving the sockeye salmon supply. A considerable body of opinion whose chief spokesman is Mr. Henry Bell-Irving, of the A. B. C. Packing Company, believes that the Fraser River, both in B. C. and Washington waters, should be closed to all fishing for a period of four years, in the expectation that the sockeye salmon will in the natural course replenish the river. This opinion arises from the belief that over-fishing has produced the reduction in the sockeye salmon in the Fraser. So far as the B. C. Cannerymen are concerned they believe the greatest over-fishing of the Fraser River sockeye is and has been over in Puget Sound by traps and seines. Particularly are seines blamed for the intensive fishing of the sockeye. Of course, on the Fraser in Canadian waters no seines are allowed, and fishing is all by means of gill nets that give the sockeye a fair chance to fight their way up the river to the spawning beds. It is true there are some traps on Vancouver Island, but they are considered negligible when compared with those on Puget Sound.

Hence one school of thought among the cannerymen say a total closing of the Fraser River to fishing on both sides of the line for four years is necessary. Another school of thought in B. C. says that if the seine fishing on Puget Sound were eliminated, the sockeye run would revive itself, and that it would not be necessary to close the river to all fishing. This school of thought goes even further and maintains that there is no need of closing the Fraser river to fishing, that the river, even at its low ebb of sockeye supply, pays the cannerymen to fish, and that if a longer weekly closed period were instituted, and no fishing allowed from August 25 to October 31, and fishing above New Westminster Bridge prohibited, these aids in time would enable the sockeye salmon to come back in greater numbers.

The agitation for a closed season on the Fraser is by many considered to arise from the desire of the Puget Sound Cannerymen to shut down in 1918, which is expected to be a particularly lean year. These cannerymen, according to the B. C. view, are now paying for the intensive fishing methods they have employed for years, and desire to get the B. C. cannerymen to join with them in an effort to stop all fishing, so that the former may have a reasonable argument to offer their Puget Sound fishermen for shutting down and at the same time institute a policy that would prevent the B. C. cannerymen from operating and possibly making some money. In this view the question of self interest on the part of the Puget Sound cannerymen is emphasized, and it is reinforced by citations from history wherein it is shown that when ten years or more ago a sincere effort was made by Canada to conserve the sockeye

salmon, Puget Sound cannerymen did not play the game. Very likely the times have changed, but the B. C. cannerymen desire some tangible proof of that change.

"If the Fraser River is closed to fishing for four years, what benefit does the B. C. cannerymen derive?" is asked by some of the Fraser River Cannerymen. Here also self-interest is predominant as it is in all business, sentimentalists to the contrary notwithstanding. Tying up the Fraser River cannerymen for four years means deterioration of plants, disorganization of staffs and general demoralization of business and property interests. The need of such closure will have to be proven to the hilt before it will be supported by public opinion.

Again, if the Fraser is closed, what will happen to the 2,500 fishermen who own their gasoline boats and gear? Under the findings of the Royal Commission on Fisheries northern waters are closed to motor boats. If the Fraser is closed to fishing, it is closed also to motor boats. What are these 2,500 fishermen to do? At once this precipitates a political and economic problem of an acute nature for the 2,500 fishermen on the Fraser have votes and in a democracy human rights are the equal of property rights.

What has really happened to the sockeye salmon supply of the Fraser River? Is it unique and unprecedented? Is the sockeye in the Fraser doomed to extinction? Is the need very drastic regulations or the application of sound common sense?

The year 1917 was a bad year on the Fraser for the sockeye salmon. Everyone expected it would be a bad year. The obstruction to the free progress of the sockeye to the spawning beds four years ago predated a bad year in 1917. Had these obstructions not occurred, the year 1917 presumably would have been a fine year for sockeye in the Fraser, in spite of the intensive fishing by seines and traps on Puget Sound.

Bad years for sockeye in the Fraser are not unusual. Those who have the figures dating from 1876, and the records of the Hudson Bay factors, declare that bad years have come and gone on the Fraser since first the sockeye salmon ran. And these bad years were not always due to obstructions in the river, and in some bad years the fish got up to the spawning beds in great numbers, escaping the nets and the traps by swimming low or in other ways known only to the fish.

Is it fair to assume that if sufficient sockeye got up to the spawning beds to adequately reproduce the natural supply, that the supply of sockeye salmon would be maintained? Then, the problem is to get a sufficient number of sockeye up to the spawning beds, to see that they are not molested while spawning and to guard them till they go out to sea. This may be aided by hatcheries, whose utility has yet to be proven to many minds. It is quite possible to have too many sockeye get up to the spawning beds; too many is as bad as too few. A happy medium must be struck. Closing the Fraser for four years to all fishing might result in too many sockeye getting up to the spawning beds, and economic waste would result. Perhaps a forty-eight hour weekly closed season on both sides of the border, with no fishing from August 25 to October 31, might be the common sense method of getting sufficient sockeye up to the spawning beds. If freshets do not wash away the eggs and they are left as the sockeye leaves them, unmolested, the supply should be forthcoming. Isn't that a common sense view.

Is it not a fact that at one time the Columbia River

was said to have been fished out? How does the Columbia River stand to-day as a salmon river? Did it require a four year closure to rehabilitate itself? What salmon river has been so intensively fished with all manner of gear as the Columbia? Is there not a lesson to be learned from the Columbia River, in view of the Fraser River problem?

Furthermore and finally, for this writing, greater fish production is incumbent upon the canners of the Pacific to meet the needs of the Allied Armies. Shutting down the canneries of the Fraser River for four years, would not aid in the immediate increase of fish production, while its future assistance so far as can be perceived, must be considered as problematical.

The general view of the B. C. canners, as one finds it in a casual survey, is that a longer weekly closure, no fishing from August 25 to October 31, and the elimination of the Puget Sound seines will give the sockeye salmon of the Fraser River a fighting chance to come back.

WM. HAMAN GREENWOOD.

HOW WHAT REMAINS OF THE FRASER RIVER SOCKEYE SALMON MIGHT BE CONSERVED AND MULTIPLIED.

To the Editor of The Canadian Fisherman:

Dear Sir,—As you and your readers are doubtless aware, the supply of salmon, Sockeye salmon especially, is being rapidly depleted in a most alarming manner, and it appears that if some steps are not taken in the near future to stop this depletion, the Sockeye salmon will soon become almost extinct as far as the Fraser river is concerned.

Various remedies have been recommended by different interests and individuals, the most drastic of which are either to dismantle the hatcheries, do away with all close seasons and fish the river out completely, or to close the river entirely for a number of years and allow nature to re-adjust itself in this respect.

Now, as to the first proposition, fishing out the river entirely. The principal reason advanced for this is the fact that our American cousins across the line in Puget Sound, have the first call on the salmon that are on their way to the Fraser river, and by employing large numbers of purse-seines and traps, methods that are not allowed to be used in Canadian waters, undoubtedly secure large quantities of salmon that would otherwise find their way to the Fraser river, and incidentally into the nets of the fishermen. The only remedy for this state of affairs appears to lie along the lines of a mutual understanding between the Americans and ourselves as to the proper methods whereby each country may secure their share of these fish, and still allow enough salmon to reach the spawning grounds to insure an ample supply for the future.

This can only be done through friendly negotiations, and although the fishing interests on the other side have not as yet shown that spirit of fairness which we have a right to expect from them, they must soon see that it is as much to their interest as it is to ours, that something should be done to preserve the Sockeye salmon on the Fraser from total extinction, and if we should do as some suggest, and fish the Fraser out completely, it would appear to me that to use a homely simile we should only be "cutting off our nose to spite our face."

In regard to the suggestion to close the river entirely for a number of years, and trust to nature to restore the salmon supply. This plan appeals to many people, especially to those who have not given the subject thought, and it would appear to the ordinary observer that the mere fact of closing the river and allowing all the salmon to proceed unmolested to the spawning grounds, must of necessity result in a very large increase in the salmon supply in a few years' time, but there are others who are not very optimistic about this, and point to the fact that for a good many years now the hatcheries have been returning to the river many more millions of salmon annually than are taken out by the nets or traps of the fishermen and canners; for instance, last year, 1916, less than three-quarters of a million adult salmon were secured both by the traps and purse-seines on Puget Sound, and the nets of the fishermen on the Fraser, yet the same year over seventy-seven million, five hundred thousand young salmon fry were liberated in the Fraser river water-shed by the hatcheries alone, and when we take into consideration the fact that the hatcheries secure but a small percentage of the salmon spawn that is annually deposited on the spawning grounds, it would seem that many more millions of salmon are produced every year than are ever destroyed by human agency, the fact appears to be that nature in the case of the salmon, as in many other forms of fish life, only provides for reproduction of the species, and although these fish are very prolific (the Sockeye salmon depositing from three to four thousand eggs), nature has already provided enough natural enemies to ensure that these fish will not exceed their proper place in the different forms of fish life.

The question then arises, can anything be done, or has anything been done, to discover what are the natural enemies of the salmon, and what steps can or should be taken to destroy them.

As regards the life history of the Sockeye salmon, little or nothing is known after the young fry has left the Fraser river for its home or feeding-grounds in the Pacific Ocean, until its return as an adult salmon four years later for the purpose of spawning, which appears to be the closing chapter of its life. What enemies or natural forces it has to contend with during its stay in salt water are unknown to us, with the single exception of the Hair Seal; this we know from personal observation to be a very deadly enemy, not only to the Sockeye, but to all other kinds of salmon; in fact at the present time of writing, although the Fraser river is open for fishing, and a few Steelhead salmon are known to be running, the seals are so plentiful that very few fishermen care to risk their nets, and what few salmon are caught are taken away by the seals. For the last few years these animals have been rapidly growing more destructive, or rather, as the salmon supply grows scarcer their depredation has been more noticeable, and it is no exaggeration to say that last year more Spring salmon were taken by the seals than by the fishermen, and when we consider that these salmon were worth no less than twelve cents per lb. to the fishermen during the early run, it will easily enough be seen what an enormous amount of money it must cost the Province of British Columbia to feed a herd of from ten to twenty thousand Hair Seals, and although it is perfectly true that these animals do not feed on salmon exclusively, at the same time salmon are their favorite food, and when this

is not obtainable they live on other edible fish. On the Fraser river during the early spring the river is full of them, and as soon as a fisherman throws out his net it is immediately followed up by Hair Seals, and directly a fish strikes the net it is a race between the seal and the fisherman as to who gets there first, with the seal generally the winner, and it is not only the amount of fish that the seals eat, but they are also very destructive, as when they have eaten enough salmon to partly satisfy their appetite, they will go along the nets and take a bit out of every fish that they can reach, always taking the salmon by the throat and tearing out the entrails, as this appears to be their favorite "tit-bit," this very often results in the fish being torn out of the nets altogether, and of course the rest of the salmon sinks to the bottom of the river.

The attention of the Department has often been drawn to this state of affairs, and spasmodic efforts have been made to destroy the seals, a bounty of three dollars one year, and one dollar other years, has resulted in a few of them being destroyed, but as only a small amount of money was appropriated each year (some three or four thousand dollars) very little has been accomplished. Last year the fishery authorities made some attempt to destroy them, by blowing them up on the sand-heads at the mouth of the river, where they congregate in large numbers to bask in the sun in the daytime and sleep at night. Two different mines were sprung during the summer, but owing to the looseness of the sand and the limited amount of explosives used, very little result was obtained, although in one case the bodies of three dead seals were found, and the fishery officers claim that many more were killed. This, of course, is very problematical, as it would appear to be almost impossible to blow these seals (many of whom weigh over three hundred pounds), into such small pieces that they could not be found.

The only practical solution of the seal problem appears to be that the Government should offer sufficient inducements in the way of a bounty for their destruction, when no doubt an organized effort would be made to destroy them. The Hair Seal, however, is not the worst enemy that the salmon have to contend with; other and more destructive agencies are at work, wherever the salmon goes to deposit their spawn, there you will find the place literally swarming with other fish, whose sole mission in life is to destroy salmon, Chub, Squaw fish, Char, Trout, Cusk and many other varieties of fish live almost entirely on the spawn and young fry of the salmon. As the female salmon is spawning she is surrounded by these fish, who seize every opportunity to dash in and eat up the eggs as fast as they are deposited; the male salmon in the meantime is driving them away, and undoubtedly succeeds in preserving a large number of the spawn from destruction at this time, but as soon as the young fish are hatched out and are able to move around in the streams to seek their food, they have the same peril to contend with, even after they attain sufficient size to leave their parent stream and reach the lakes, they are still the prey of these fish, and it is a common sight to see the sloughs and streams that connect the lakes with the Fraser river literally barred at their narrowest point by these fish, more especially where there is a bridge across the stream, there you will find them by the thousands, and as the young salmon are endeavoring to reach the Fraser on their way to

the sea the greater part of them are devoured by these voracious fish.

While these facts are well known to fishermen and others interested in the fishing industry, absolutely nothing has been done. Fishery officials, after inspecting the spawning grounds of the salmon have frequently called the attention of the Department to these things. Mr. Babcock, in one of his reports speaking of the trout at certain spawning grounds, says, that they are so thick that it "seems wonderful that a single salmon should survive" the same thing is mentioned by Mr. Hickman in this year's report, after inspecting the spawning grounds on the northern rivers, while the inspector who used to be in charge of the Granite Creek hatchery (now closed for want of fish) says that the cusk were so plentiful in his vicinity, that he has speared over a hundred of them in one hour, he also mentions that one of them contained a half-pint of young salmon fry.

While this wholesale destruction of fish is going on, naturally it is impossible for us to secure any large quantity of salmon without depleting the supply.

Would it not appear a matter of common sense that when we wish to step in and interfere with nature by catching the salmon that are only meant to supply other fish with food, that we should at the same time catch the fish that are feeding on the salmon.

This, of course, could only be done by Government assistance, as Chub and Suckers are not a commercial fish, although Char and Trout and perhaps some other species could easily be sold; in fact, if the use of small meshed nets were allowed there is no doubt that large quantities of these fish would be caught by the Indians and others for food purposes. This, however, is a matter for further consideration, the principal thing in the meantime is to get the Government to take some action towards preserving the salmon, and it is the opinion of a great many people here that this could best be done by destroying their natural enemies than in any other way.

Yours truly,
M. MONK.

December 17th, 1917.

DEPARTMENT OF THE NAVAL SERVICE, CANADA.

Ottawa, January 9, 1918.

Sir,—The Special Commission which was last summer appointed to investigate the conditions and requirements of the salmon fishery in district No. 2, British Columbia, as well as the question of the prohibition and exportation of fall salmon in a fresh state, have submitted a preliminary draft of their final report. This draft is not complete, but it contains the recommendations of the Commission. A summary of these recommendations is as follows:

1. That no licenses for any new canneries be granted for this district for at least five years, because,—

(a) The quantity of salmon now being taken, is, in the light of the evidence, the maximum that may be safely caught until the supply is substantially increased, and it will take five years to determine whether the present supply is sufficient to assure the future runs being kept up and to demonstrate the effectiveness of any new methods of propagation and development that may be taken.

(b) The existing canneries now work to only 17 per

cent of their theoretic efficiency on a 12 hour per day basis, during the limited season of about two months' time they are in operation.

To compensate for the special privilege thus involved, the Commissioners recommend that the canners be required to pay instead of a license fee of \$50.00 per annum, such amount based on their profits and the number of fish handled as can properly be decided upon when the nature and extent of war taxation generally is worked out, and that in the meantime a minimum fee of \$1,000 per annum be charged.

They further recommend that companies owning two or more canneries in any area may be allowed to consolidate their operations in one cannery if they so desire, without giving reason for granting any licenses for new canneries.

2. The Commissioners recommend that no motor boats be allowed in salmon fishing operations, in this district, for at least five years, because,—

(a) Generally speaking the fishermen do not want them.

(b) The canners would likely have to provide them, and they are opposed to them as involving a large initial cost and cost of maintenance, and if one cannery used them the others would be forced to do so.

3. The Commissioners recommend that no change be made in the number of boats that may be fished in the different areas.

4. The Commissioners recommend the discontinuance of what are known as attached fishery licenses or licenses to individuals to fish in connection with certain specified canneries, and that but one kind of gill-net fishing license be issued.

They further recommend that the competency of a fisherman be established as a qualification for a license, and that local boards consisting of three members, one to be appointed by the Department, one by the fishermen and one by the canners, be constituted to examine the qualifications of the fishermen and grant certificates of competency.

Should there be more certified fishermen than there are licenses for in any area, the Commissioners recommend that the licenses be distributed amongst the certified white fishermen, naturalized Japanese fishermen and Indian fishermen, in proportion to the population of these residents in the coast districts, according to the last census and that this method be followed to make up any shortage there may be, should there not be sufficient certified fishermen for all the districts.

Recognizing that it will take some time to get this arrangement into effective operation, the Commissioners recommend that the licenses for the season of 1918 be issued on the same basis as they were during the 1917 season, and that the new arrangement come into effect in 1919.

5. Some time ago the Commissioners recommended that the export of fall salmon in a fresh state be not prohibited but that the close season for such fish be lengthened by five days. This recommendation was approved and the regulations have already been so amended.

The Commissioners, however, recommend that all fresh salmon buyers be required to take our licenses.

I am, Sir,

Your obedient servant,

G. J. DESBARATS,

Deputy Minister of the Naval Service.

DEPARTMENT OF THE NAVAL SERVICE.

Notes on the Results of sea fishing operations in Canada during the month of January.

To the abnormally cold weather on the Atlantic Coast is mainly due a comparatively poor production of fish in January of the present year.

All the districts show decreased landing of cod and haddock except Guysboro county, N. S., which gives a slight increase, and the Liverpool district of Queen's county, N.S., which shows considerable development in this fishery.

The total quantity of the staple kind, cod and haddock, landed in the whole of Canada during the month was 10,714 cwts. less than that for January 1917. The value however, was greater by \$11,387. It is worthy of note that the catch of these fish during January this year was almost 30,000 cwts. less than that for the same month in 1915.

The smelt Fishery resulted in a catch almost equivalent to that for January last year but the value increased by \$58,120.

The herring catch, almost entirely confined to British Columbia at this season, was 17,022 cwts. less in quantity but \$85,364. greater in value.

The current lobster season which opened on November 15th in Charlotte and St. John counties N.B. is now in progress on both sides of the Bay of Fundy, and on the Nova Scotia coast eastward to Halifax harbour.

Up to the end of January the total pack was 2,740 cases, while 5,418 cwts. were shipped fresh in shell to market.

During the corresponding period in the preceding year the pack was 4,060 cases and the shipment in shell 10,904 cwts. The same period in 1914 gave a pack of 9,259 cases and a shipment in shell 18,349 cwts. while for the 1916 period the figures were 8,737 cases and 25,622 cwts.

The total value of all the sea fish landed in Canada during January amounted to \$830,367 which notwithstanding diminished catches, gives an increase of \$2,757.00 over the value for the same month last year.

B. C. SALMON PACK — A RECORD ONE.

The British Columbia salmon pack for 1917 totaled 1,557,485 cases — an increase over the record pack of 1913 of 203,584 cases. Large as it is, however, the B. C. pack is approximately one-tenth of the world's salmon pack—Alaska accounting for over five-tenths.

The B. C. pack is made up as follows: Sockeyes, 339,848 cases. Red Springs, 48,630 cases. White Springs, 27,646 cases. Chums, 475,273 cases. Pinks, 496,759 cases. Cohoes, 157,589 cases. Bluebacks and Steel heads, 11,740 cases.

The Fraser River District led with 377,988 cases, followed closely by Vancouver Island District with 377,884 cases. The Sockeye run on the Fraser failed to materialize. A feature of the fishery was the high prices paid for the lower grade fish — as high as 70 cents being bid for dog salmon by the competition of American buyers who purchased the raw fish in order to complete contracted packs and fill their cans. Fishing gear and the increased cost of operations advanced from 50 per cent to 75 per cent over the year previous.

Canners faced unusual difficulties at the beginning of the season, but the outcome was eminently satisfactory.

Billingsgate Market

London, January 26th, 1918.

The past week has seen the publication of an Order in Council made under the Defence of the Realm Regulations by the Food Controller fixing maximum prices above which no fish must be sold in this country after January 23rd. Fish has thus been brought into line with most other staple foodstuffs. It is impossible at the moment to gauge the effect of this Order on the fishing industry of the United Kingdom, but from Tuesday onwards this week the markets have presented an unsettled appearance; much hesitancy has been shown by wholesale firms, both at the coast and at the inland markets, in buying, as it will take a day or two in order to ascertain the outside level at which operations can be conducted to show a working profit bearing in mind that the retailer also must allow for his profit when he purchases from the wholesale salesman or merchant. On the whole the prices cannot be said to have been fixed unduly low, and for this reason it is to be hoped that the effect of maximum prices will not be the same as has been the case with so many other kinds of food, viz., to check supplies. After the next month or two landings will show their seasonal expansion, and this should have some effect in keeping rates at the coast well below the maximum, thus leaving a reasonable margin for distributors. Until that time all concerned must pull together to make as much success of the Order as possible.

Owing to the meat shortage in this country, which threatens to become more acute before an improvement sets in, there is every prospect of any frozen fish marketed in prime condition meeting a ready market. I would urge exporters to consider the possibilities of sending kippers to the London market.

To sum up, trade is brisk for all kinds of fish, but until matters adjust themselves with regard to the controlled price operations will be hampered.

London, February 2nd, 1918.

The outstanding feature of this week's market has been the insistent demand for all classes of fish. No doubt the shortage in meat and other essential foodstuffs has contributed largely to this state of affairs, but it is also pretty obvious that the issue of the Order fixing maximum prices for fish has given a fillip to the demand for this commodity; maximum prices are now the rule rather than the exception in Great Britain, and they tend to install confidence in the public by removing in the mind of the man in the street any apprehension of "profiteering" on the part of any section of food distributors. Taken on the whole, the landings of fish this week have been comparatively generous; the catches at various ports, and of particular kinds have varied from day to day but the aggregate arrivals at Billingsgate and other large distributing centres have been pretty generous. Despite the favourable supplies, however, prices have been easily maintained, and curious as it may seem the maximum rates allowed under the Fish (Prices) Order, 1918 have in many instances been readily paid by the merchant at the coast, which of course leaves no margin of profit either to him, the salesman in the provincial markets, or the retailer, to say nothing of unavoidable expenses, such as railway carriage, etc. However, no doubt, matters will adjust themselves in this direction in the course of a day or two; already, to-

wards the end of this week, coast buyers appear to be anxious to "get in" at a level which will be workable in view of the fixed maximum values. Of course, the great factor in this direction will be increased supplies, which can confidently be looked forward to after next month should no untoward events happen to impede the prosecution of deep-sea fishing. As it is, there is no difficulty in placing every scale, every ounce of fish procurable, in the hands of the consumer, hence the anxiety of tradesmen to secure supplies.

The Canarien frozen cod and fresh haddocks marketed by the Ministry of Food have met a steady demand, Mr. Peter Forge, the Government Agent at Billingsgate, finding a sale for increasing quantities daily. As mentioned in straighten lines a previous report, the size of the cases in which the fish is packed militates against fishmongers giving it a trial. To encourage fishmongers to offer this fish to the public without incurring risk of a heavy loss in the event of customers not taking to frozen fish at once, Mr. Forge is supplying sample orders in five stone lots. In conversation with Mr. S. J. Williams, the Government Auctioneer at Billingsgate, who is attached to the firm of Peter Forge as head salesman and buyer and is handling the Government frozen fish entrusted to his firm for distribution, it was gathered that although this cod and fresh haddocks have been on offer for more than a fortnight, and numerous cases have been disposed of each morning, in no instance had a complaint been made. The fresh haddocks, where "pan-frozen" appeared to give the most satisfaction.

Frozen salmon is practically unobtainable; there is a big call for it from all parts of the country, and in the isolated cases where firms hold a few fish the full maximum rate of 2/2 per lb. for whole fish is easily realized. Firms on your side should make every endeavour to secure freight for frozen salmon and halibut and consign it to Billingsgate Market, London. Provided the quality is satisfactory a ready sale is assured at full value. Frozen kippers also would meet a brisk market.

ST. JOHN, N. B.

(Special to the Canadian Fisherman.)

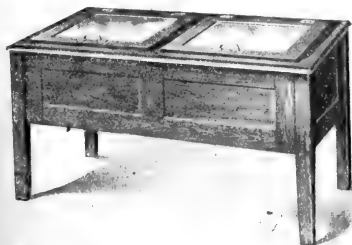
It was decided at a representative meeting of fishermen in this district, held in St. John, N. B. on February 8th that a minimum price of \$35 for sardines per hoghead was a fair price for the coming season. Dr. W. V. Kierstead, the provincial representative of the food controller was present at the conference and the matter was thoroughly talked over with him. It was contended by local fishermen and statements were submitted to the effect, that last year eighty per cent of the weirs did not pay expenses, fifty per cent did fairly well, and five per cent only did an exceptionally good business. After giving the matter full and careful consideration the above price which met with the approval of all was decided upon.

W. W. Leonard of St. John presided over the meeting and among those present were:

J. F. Calder, Dominion fishery inspector for this district, B. B. Brittain, local inspector; D. Cassidy, Maces Bay; James Corscadden, Dipper Harbor; Oscar Hanson, Little Lepreaux; A. A. Stuart, Deer Island; C. C. Ingalls, Grand Manan; J. B. Catherine, L'Etete; William Holt, St. Andrews; H. Belyea, H. P. Robertson, St. John; R. E. Armstrong, secretary of the Board of Trade, acted as secretary for the meeting.

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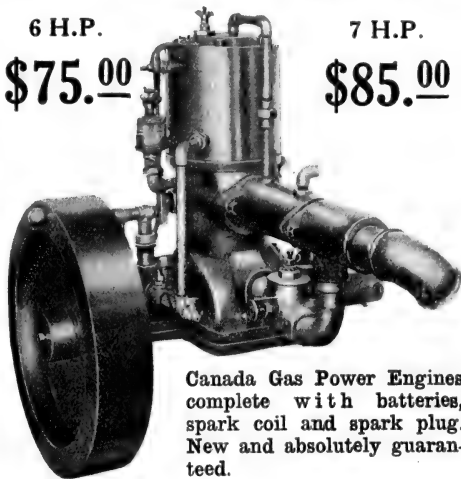
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Should We Have Compulsory Fish Inspection?

An Interview With an Inspector.

The Fish Inspector for the Maritime Provinces, Mr. Robert Gray, when seen the other day by a representative of the "Fisherman," said in reply to an enquiry respecting the pickled fish industry:

"I am sorry to have to admit that inferior barrels still figure far too prominently in some Maritime districts, and I am afraid this will continue until such time as Fish Inspectors are empowered to have inferior packages forfeited and destroyed. As things are at present the inspecting officer has no power to stop the use of any kind of an inferior package, and of course many packers take advantage of this simply because the initial cost of the package is cheap. I know that coopers are having difficulty in getting delivery of hoops, but that is no reason why the staves and ends should not be cut to the standard thickness, width and length, and properly trussed together. The most serious objection is lack of trussing, and when this is pointed out to coopers they explain that they have to compete with the man who produces the cheap article and must, therefore, throw as many together as possible. The latest idea is to coat the inside of the joints with a mixture of resin and wax or other solution for the purpose of tightening the leaks, but unless the trussing has been faithfully performed this leak preventive is of no avail, for when the filled barrel is moved around in the usual rough way the joints are disturbed, so that the pickle will escape just as if nothing had been there to prevent it doing so. All the coating that is required inside a properly trussed barrel is over the black or cracked knots, but the staves should be of the quality specified in the Fish Inspection Act."

"Does pickled fish packed in these inferior barrels sell readily?"

"Yes, and that is just the great trouble. Last Fall, when prices for pickled fish were forming, I knew of parties who tried to sell their fish over and over again as the price went up. In many instances this could have been managed had not the original purchasers been put wise. The ease with which they can dispose of their product has the bad effect of making packers careless, for they know that if their goods do not suit one man they will suit another."

"Are those faulty containers allowed to reach the consumers?"

"Yes, in too many cases they are, but a proportion are re-cooped. Iron hoops are usually put on the ends, but that does not help the bilge. The fact that leaky barrels continually reach consumers certainly does not encourage the purchase of pickled fish as part of the winter's supply of food stuffs. Only a few days ago I was asked by a farmer why good pickled fish are so hard to get. He claimed that after paying exorbitant prices for what should be the genuine article he invariably found more or less bad fish in every barrel, and that as a consequence he has stopped taking chances either on poorly made barrels or on their contents. His chief complaint was of rusty fish, and this is undoubtedly caused by the fish being exposed to the air through lack of pickle. In view of the present urgent need for food conservation this appears to me to be a very serious matter, and all the

more so when we know how to put it right. If one man was all who had quit purchasing pickled fish for food because of their quality he would not count, but I feel very sure that there are thousands in the same position."

"Are Fish Inspectors given the same powers as the Fruit Inspectors?"

"No, the Inspection and Sale Act under which the Fruit Inspectors work is compulsory, whereas the Fish Inspection Act is not. This being so you can see how a Fish Inspector is handicapped. A barrel of apples ready for market must be stencilled with the packer's name, variety of apple, and the grade. If when the Fruit Inspector comes along everything is not just as represented, he immediately marks the barrel "Falsely Packed," or "Falsely Marked," and besides he can put the packer to a whole lot of trouble, both financially and otherwise. On the other hand a pickled fish packer can pack up any old thing in any old kind of a package, stencil it anyway at all, and get off with it nine times out of ten, simply because there is no law to stop him. I can tell more than one good fish story regarding what has been found in a barrel which was only supposed to contain 'No One Fat July Herring.' Honestly, I don't think the pickled fish business is getting half a show, but I do hope to live to see the Fish Inspection Act made compulsory."

"Do your remarks apply to herring cured by the Scotch method?"

"No, not to the same extent. Curers of herring by the Scotch method in this country are now realizing that they must produce the goods or accept a price similar to that paid for the split herring. They must be very particular both regarding the quality of the barrel used, and the care they take in the handling of their fish."

"Are many curers adopting the Scotch method?"

"No, not so very many. Curers saw good prices in sight for split herring, and as anything in the shape of herring goes in that line they did not pay the attention they should do to a method which if properly carried out means at least 100 per cent. increase in the value of their goods. Another thing which prevented a larger quantity of herring being cured by the Scotch method was the reported scarcity of salt which caused fishermen to take their nets ashore at a time when the best quality of herring for this purpose was on the coast."

"How did the prices of split and Scotch cured herring compare this season?"

"When split herring were making around \$7 per barrel, properly Scotch cured herring netted from \$20 to \$22 per barrel. Of course, everyone who tries to put up herring by this method is not so fortunate, for there is just one way to do this, the right way. Everything has to be just so to bring big prices, and as this cure of fish are usually sold on their merits the prices realized depend entirely on the quality and cure."

"What about drowned herring now?"

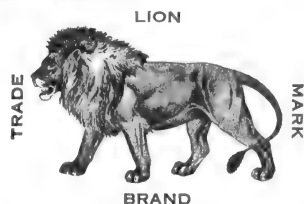
"There will be drowned herring just as long as herring are fished in anchored nets, unless said nets are cleaned twice in twenty-four hours. Moreover, as it is almost impossible to cull out all these objection-

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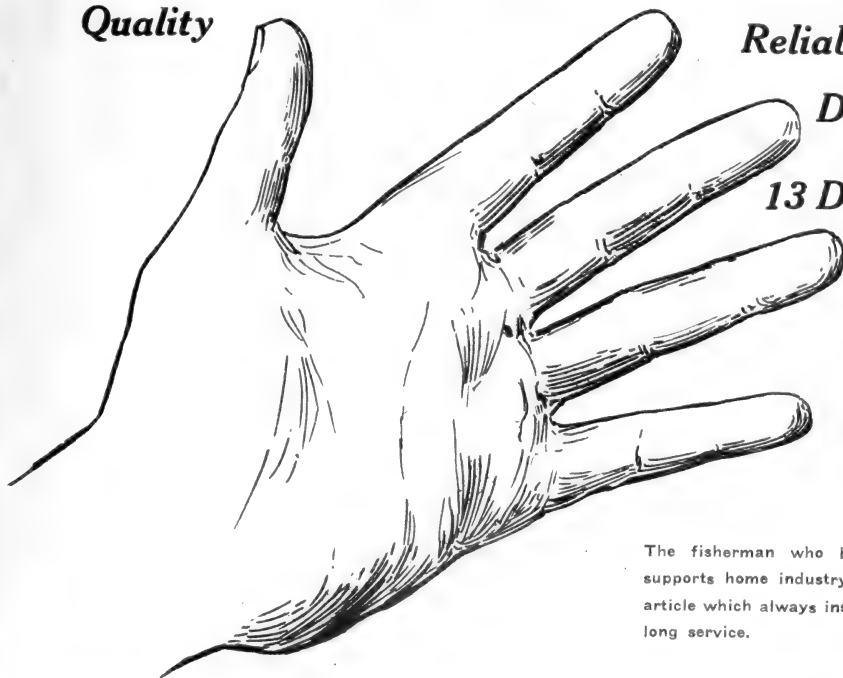
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able fish some of them, perhaps only one fish, will find its way into a barrel of good herring, and often that one bad fish is sufficient to affect the price of a whole consignment."

"Do you consider that drowned herring are all right for the split cure?"

"I do not think they are. Certainly not for a first class article. It is well known to practical men and many others that a drowned herring is no good for bait. If a fisherman can purchase bait caught in a trap he will have nothing to do with netted herring. They cannot be cured by the Scotch method, and even when the deteriorated matter is scraped from the back bone, which is very seldom done, they are still inferior as a split. I am of opinion, too, that curers allow their fish to soak too long in water. This causes the flesh to become short. A little salt added to the water used for soaking purposes gives good results."

"Is the packing of split herring done carefully?"

"Not as a rule. Some people only pack the two tiers at top and bottom, the balance being thrown in, and in most cases two herring are packed at a time. To do the job properly every herring should be packed individually, and previous to being packed should be thoroughly roused in salt so as to have salt adhering to the outside of the fish, which will prevent them sticking together."

"Do coopers and curers take much interest in your demonstrations?"

"They all seem to be very much interested, although all do not try to copy. However, it is no trouble for me to point to both coopers and curers who have benefited very considerably by taking practical advice and practicing it."

"What length of time do you spend in each place for demonstration purposes?"

"I have to use my own judgment regarding that. If on my arrival at a fishing village, the fresh herring are there I can demonstrate how the fish should be cleaned, graded, roused, packed and salted in an hour or so, but I would require to return to that place again in two or three days to demonstrate the second process which is known to the trade as putting the fish in seastick order. After another week or so I should be there again to demonstrate the bung packing process which has to be performed very carefully. Now, as I am at present situated it is impossible for me to give any one place the attention I would like to. For my work takes me all over the Maritime Provinces."

"If I were called only where people really mean business things would be different. I once travelled nearly 300 miles at the best of the herring season for the purpose of demonstrating, only to be told by my prospective pupil that what he did not understand was what the milt or roe of a fish was. Honestly, I thought this veteran fisherman was trying to pull my leg. However, I gave the explanation and after he had brought ashore about fifteen herring, ten of which were drowned (this comprised his catch for three days), and I had shown him how to detect the drowned fish from newly netted ones, how to clean, select, rouse, pack and salt his herring by the Scotch method, he told me that he had been reading quite a lot regarding this method of cure and that he thought if Scotch cured herring could bring such remunerative prices surely a half barrel cured in this way would be all right for his winter's use. To put it mildly this al-

most took the wind out of me, and this is only one instance."

"Is it likely that the Act under which you work will ever be made compulsory?"

"I have only heard one dissenting voice and this particular man has absolutely no argument. He says that he can sell herring in a fifty cent barrel, but he does not admit what he pays or receives for them. I claim that a pickled fish barrel cannot be made for fifty cents, and further, before herring can be kept in good condition for any length of time in this man's fifty cent package, another fifty cents per package would have to be expended on pickle, hoops and cooping, and despite that a proportion of the fish would be discolored or perhaps rotten."

"How do you think the Fish Trade of this country would take to compulsory inspection?"

"I fail to see why any person running an honest business would not receive such a proposal with open arms. There is no denying the fact that the consumer would get a better article, and that in turn would create a greater demand. The greater the demand the bigger the prices all round. The trade would certainly have no objection to larger prices while the consumer would be pleased if he received better value for his money."

INTERNATIONAL COMMISSION RECOMMENDED TO HANDLE FRASER RIVER SALMON RUNS.

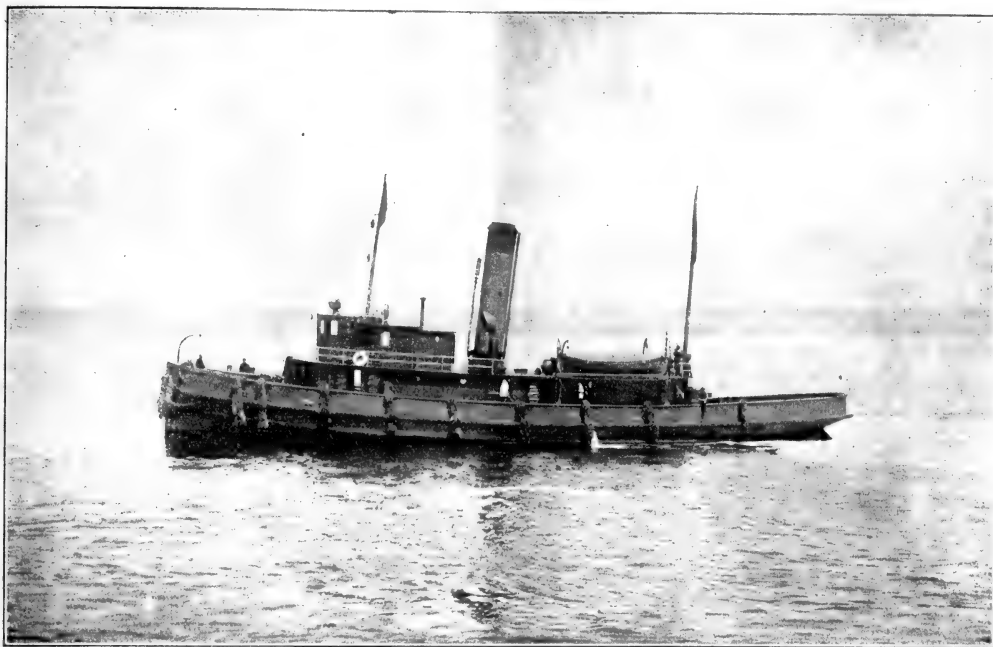
The question of the Fraser river salmon fisheries was brought up on representations made by the British Columbia Cannery Organizations and by private parties of British Columbia.

The recommendation is contained in the following resolution communicated to the Minister of Marine and Fisheries:

"The Research Council and the Biological Board of Canada unite in recommending that the Dominion Government take steps to arrange a convention with the Government of the United States looking towards the appointment of an international Commission which shall have the control of the salmon fisheries of the Fraser River and of all those waters through which the fish pass to reach the Fraser River, this commission to have full power to make and enforce regulations for the effective conservation and the restoration of these fisheries."

The International Commission as suggested would have powers similar to those of the International Waterways Commission appointed by the governments of Canada and Washington. This, in the opinion of both the Research Council and the Biological Board is the only way in which the sockeye salmon can be preserved and the canning industry of British Columbia continued.

So far as British Columbia fishermen are concerned they are convinced that the greatest over-fishing of the Fraser river sockeye has been in Puget Sound by traps and seines. Some British Columbia fishermen are firm in the belief that fishing should cease in the Fraser for a four-year period if the industry is to be preserved at all, while others blame the intensive fishing in Puget Sound for the failure of the Fraser to continue to be the greatest sockeye spawning stream in the world.



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The Cormorant and the Salmon

By A. BROOKER KLUGH.

That "things are not always what they seem," is a saying old and hoary—but true, and we in Canada are at last coming to realize this in our dealings with our wild life. Not so long ago laws and regulations were made and unmade by lawyers and politicians (which if we look up the personnel of our house of commons and legislative assemblies we find to be pretty much one and the same) at the instigation of some particular class or trade. Now we have advanced to the stage where we call in expert testimony before such measures are passed, and the species of animals concerned get at least a fair trial before they are penalized. The case which I now set forth is a good example of the results attained by such expert testimony.

A little while ago the attention of the authorities at Ottawa was called to complaints of damage done by cormorants to the salmon fisheries of the Gaspe coast. As the charges against the cormorant seemed serious, Mr. P. A. Taverner, one of our best ornithologists and a thoroughly good biologist, was detailed to investigate the charges and report upon them. Mr. Taverner accordingly went to Perce village and Gaspe basin and spent seven weeks in this investigation, during which time he not only studied the habits and food of the cormorant, but secured evidence from fishermen, river guardians and others of experience on the salmon rivers.

Mr. Taverner found that the species concerned was the Double-crested Cormorant, a bird which shares with its cousin the Common Cormorant the fisherman's name "Shag." Of these two species the latter is slightly the larger, and in adult plumage can be separated from the former by the occurrence of a white patch on the flanks. The adult Double-crested Cormorant, in the highest plumage, has a crest, on either side of the crown, of fine filamentous feathers, which is absent in the Common Cormorant. This crest, from which the species derives its common name is, however, not always present and as some birds never attain it and others wear it for so short a time in the breeding season, its value as a recognition mark is much reduced. The Double-crested Cormorant is a rather large bird, comparing favorably in this respect with a good sized domestic duck, but slimmer in build and more graceful in outline. The adult is solid black with green reflections over most of the plumage. Spaces about the eyes, and at the base of the bill, and a small throat pouch, are bare of feathers and are colored bright orange.

At Perce Mr. Taverner found that the cormorants nested only on the top of Perce rock, and he places the number breeding there at about 1,300. At Gaspe Basin he found two colonies, of 180 and 540 respectively.

Throughout the day all the cormorants which are not incubating or brooding young are found on the estuaries of the rivers, and their feeding-grounds are the wide tidal areas which are just awash at low tide and covered by two or three feet of water at high tide.

The food of the cormorant consists practically entirely of fish and Mr. Taverner found that one of these birds requires about three pounds of fish per day. He says, "Assuming two full meals per day per individual would give for the Gaspe Basin 600 pounds of fish per day consumed by cormorants, or 45 tons per season. Should the cormorants of Gaspe turn their attention to fish of economic importance their possibility of damage would be considerable."

In the vicinity of Gaspe and at various other places on the coast the salmon is an economically important fish and furnishes livelihood to a large number of inhabitants. The mouths of the salmon streams are lined with their full legal quota of nets which supply fish to the general market. The streams themselves are owned by, or leased to, private individuals and angling clubs, and are, therefore, not open to public fishing. The law allows only fly fishing upon them, the catch therefore is limited and cannot be looked upon as an economically important food supply. However, the owners of the streams are necessarily men or clubs of wealth and distribute considerable money in the immediate neighborhood, besides paying a comparatively high rental to the Provincial Government for the privilege.

The live-history of the Atlantic Salmon is as follows: The eggs are laid in the sand at the headwaters of the streams in the autumn, being fertilized by the male who then covers them with sand. In the spring they hatch and the young, still with a large sac of yolk attached, seek safety in the crevices in the rocks until the sac is absorbed, when they begin feeding and gradually spread down stream, here they remain for two years growing into fingerlings, or as they are technically termed, parr. At this stage they are about four inches long and proceed to deep water as smolts. Just how long they spend in the sea at this stage has not yet been definitely ascertained, but when they again ascend the streams they are grilse with a weight of from two to five pounds. They descend to the sea at the end of the season to come back the following year as mature salmon, weighing from twenty to forty pounds. The adult salmon does not feed in fresh water until after the deposition of the eggs. The trip to the breeding-grounds at the headwaters is often long and arduous and when the period of reproduction is over both sexes are thin worn and unfit for use as food. In this condition they pass down stream under the name of kelts to be rejuvenated in salt water and made ready for successive breeding migrations.

It is evident then that the salmon have to run the gauntlet of their enemies in the estuaries once as smolts, twice as grilse, and again annually as long as they breed as salmon and kelt. As far as cormorants are concerned the grilse, salmon and kelt are obviously beyond danger on account of their large size. There remains then only the parr and smolts that have anything to fear from cormorants and these only as they are making the passage from fresh to salt water.

Mr. Taverner found that the cormorants in the estuaries were not catching salmon. He ascertained

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this in a manner which admits of no doubt as to his conclusions, that is by shooting birds which had been actively engaged in fishing and examining the contents of their stomachs. He found that their food consisted mainly of sculpins, with an occasional herring, capelin, eel, flounder or tomcod. Some birds which he shot on the reaches of the river beyond tidal influence, that is in the portions in which the parr were more abundant and in which there were no sculpins, he found to have empty stomachs.

In his report Mr. Taverner mentions the fact that complaints as to the depredations of cormorants came from the members of the angling clubs and not from the commercial fishermen. His investigation proved that the complaints were groundless and he thinks, indeed that the commercial fisherman has a more real grievance against the cormorant than the angler. He says, "On the coast, about Perce, the cormorants certainly do the fishermen a certain amount of injury. It is not the salmon industries that are here affected but the cod-fishing. During a large part of the season the cod fishers rely altogether upon herring for bait and for this purpose the herrings nets are set nightly. When these fish are abundant the toll taken by the cormorants is not noticeable, but when, as regularly occurs, herrings are scarce, the birds go to the nets and help themselves to the contents. The few herring they take are on the whole a mere bagatelle, but when half a dozen small fish are all that can be expected from a net to serve for a day's fishing, and half or more are taken by cormorants, the fishermen can hardly be criticized for giving vent to some evidences of discontent at the loss of a day's work and profit. However, though the fishermen do look upon the cormorant as one of their natural enemies, they do not seem to be bitter against them, not nearly so much as the salmon anglers who have only a sporting interest in their fish and are not dependent upon them for a livelihood. The best protection for the herring in the nets against the cormorants appears to be to lift the nets early in the morning before the cormorants begin fishing."

The result of this investigation by an expert proves then that any laws which would make for the extermination or great reduction in numbers of the cormorants would be entirely useless as far as the protection of the salmon is concerned, that they would incur a needless expense in the payment of bounties, and that they would be unfair to the cormorants.

The conclusion which Mr. Taverner reached in regard to the cormorant leads Mr. Taverner to add to his report some general considerations of wide application in our dealings with wild life. He says, "Leaving out the practical economic questions altogether, common humanity prompts us to destroy life only when necessary. Man having great power for good or evil has consequently great responsibilities. It is not enough to prove that a species is "useless" to justify its persecution; it must be proven actively harmful before such a course is justified, not in a slight degree, but in a manner which seriously threatens our welfare." Speaking of bounties he remarks, "The placing of shot guns in the hands of irresponsible persons at all seasons tends to nullify our game laws, valuable species suffer, and protective measures are made more difficult of enforcement."

The fact of the matter is that the inter-relations of the various forms of wild life are so complicated, so inextricably interwoven, that the general public has

no idea of them, and it often taxes the knowledge and trained powers of observation of the biological expert to unravel them. A species may seem to be useless or even harmful to man, but if it is exterminated or much reduced in numbers, we find, sometimes too late, that it had a definite function in the economy of nature and that it kept in check some other species more injurious than itself. Thus the birds of prey, and some mammals such as foxes and weasels are usually regarded as "vermin," as forms of life to be eliminated as far as possible. Yet when this was done, as it was done in parts of Scotland and in parts of Austria, a "vole plague," that is a tremendous increase in the numbers of meadow mice, occurred. To such an extent did these little rodents increase that the crops of whole districts were entirely destroyed. Further the effect upon the game-birds, in whose interest the killing of vermin was undertaken, was not what was expected. Instead of increasing in numbers the game-birds became a prey to disease, for the reason that the diseased and weakly individuals were no longer eliminated by predaceous birds and mammals, and thus spread disease far and wide. The balance of nature is in reality a very fine one and when man interferes with it the results usually recoil upon his own head.

BOOST THE SALT AND SMOKED FISH.

Salt fish—salt green cod, dried cod, stripped cod, pickled herrings, alewives, smoked cod, bloaters, kip-pers, red herrings, etc., are sea foods that will stand pushing in the Canadian market—especially during the summer and in centres remote from good transportation facilities.

There are centres in Canada where fresh fish is not to be had. These are the places where the preserved fish should be introduced. It is easily kept by the general store and will stand long transportation hauls. Apart from that advantage, the fish mentioned are palatable dishes if properly cooked. Millions of pounds of our salt dried cod go to South America, the West Indies, and Europe. Nova Scotia or Newfoundland salt cod cooked by an Italian or Portuguese chef is an epicurean delight and is absolutely disguised by the cooking. If it can be appreciated there, why not here?

Take the bloater! England's national fish, and the supper delight of the poorer classes. Canada can cure bloaters just as good as they can in England, but Canadians do not appreciate them. So it is with the others. The tastes which run to halibut, salmon, finnan haddies, trout and mackerel are too exotic for the humbler herrings and cod.

The C. P. R. Dining Car Service will simplify the railway meals and a freer use will be made of fish, especially in the salt and smoked forms. Fish dishes will be used at all meals. Hotels and restaurants should follow suit and make an effort to introduce salt and smoked fish to their patrons. It is only a matter of education. The supply can be had and the prices are right.

President S. Y. Wilson, Vice-President A. H. Britain, and Directors H. B. Short and W. Leonard, represented the Canadian Fisheries Association at the St. John session of the International Fisheries Commission.

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A Little More Enthusiasm, Please.

By M. McLAREN, Lunenburg.

Now that the campaign is under way to increase the consumption of fish in Canada, the apathy of the retail dealers in setting the virtues of fish as a food before the public seems rather strange. In Halifax, which of course is a seaport, the daily papers combined do not carry half a dozen fish advertisements, while almost every column displays the advantages of using other "Meat Substitutes," being patriotic thereby, thus helping to "Win the War." Many of the things advertised are said to contain nearly the same food value as meat. However, the plain fact is, that there is no comparison between any meat substitute now on the market, as compared with fish, which is really nature's food and healthful brain builder.

Arrangements have been made for the prompt distribution of fish in central and eastern Canada, thus bringing the bountiful products of our great waters to the door of any Canadian who wishes to partake of this food, which has been taken from the waters amid the winter storms by our quiet "Brethren of the Sea," who daily are risking perils unthought of by those "Ashore," that they may contribute their share, and help to win the war. Therefore the dealers should awaken and **Advertise**. Restaurants, on meatless days might advocate special sea foods, and house keepers to whom the proper cooking of fish is a novelty, might be induced to try fish courses oftener, if a dainty booklet were prepared setting forth (as in the booklets given to the consumer by the grocers who sell baking powder, etc.), some good recipes and also some little talks re the fishing industry, as well as a computation of the time and fuel saved during the year by frequent serving of fish courses.

Looking over the historical literature of the fishing industry, we note that in the time of Queen Elizabeth, it was compulsory (by the rules of the realm) that all those resident within Her Majesty's dominions should consume fish twice a week. The good and frugal Queen doubtless was interested in the fishing industry of that day and regarded the sumptuary measure as necessary.

No Canadian will deny the needs of the present for the conservation of meat, that it may be sent abroad for the use of our gallant soldiers whose hardships call for a stronger diet than does the routine of life followed by we who are at home, within reach of other things.

The soldiers must use the rations meted out to them, and it would be justice if the Canadian Government would make it law that upon each day fish in some form be served in every Canadian household.

The real thing for the fish business, is for the retail dealers to display a little energy, and advertise. The fishermen can't do this. Their business is to get the fish. They could get a larger quantity were it needed. The writer has visited inland homes where the housekeeper was eternally waiting for a chance to get some fish, fresh, as a change from the canned sorts, which, in their way good, never bring to the palate that "tang" of the sea, so indescribably pleasant. Whose fault is it that those inland housewives cannot serve fresh fish when they want to? Let them

know where to get it by advertising, and their joy will give quite a boost to the consumption of fish.

Lecturing in London some years ago, a world famous physician stated that if the epicure knew the value of the humble herring as compared to some of the terrific concoctions served to tickle the palate and annihilate the stomach by expert chefs, that the epicure would embrace the opportunity of consuming herring whenever possible. Herring and potatoes supply nature's food, the necessity is upon us of winning the war. The point is obvious. Transportation facilities have made it possible for all Canadians to enjoy the products of the ocean, yet upon few days other than those due to a religious consideration, and in some homes on what is supposed to be the National fish day, fish is never served. Could the average man be made to understand that the fisheries of Canada are half of our National life, and that any increase in the consumption of fish, increases the volume of industry in the trades dependent upon the activities of the fisheries, thus making prosperity all round, the proper attitude of the people toward a greater fish consumption would be attained. There is strong need for an able lecturer in all places, to tell the story of how the people can help by using more fish. This matter should be attended to at once. Those whose knowledge of the fisheries of Canada have made them capable, might prepare thoughtful statements for the press and educate the public toward the greater use of fish as a food.

The following table will give the value of fish as compared with other foods from a scientific standpoint:—

Grains of strength yielded by one pound of 7,000 grains—

Fresh Fish—129 grains.
Corn meal—125 grains.
Fresh pork—108 grains.
New milk—35 grains.
Bread—90 grains.
Bacon—78 grains.
Beer or Porter—1 grain.

Grains of warmth yielded by one pound of 7,000 grains—

Fresh Fish—980 grains.
New milk—389 grains.
Beer and Porter—315 grains.
Potatoes—770 grains.

From this scientific table, which is perfectly correct, it may be seen that fish compares as a bodily nourishment, very favorably with other staple foods, and the retail dealers in advocating its further use are not only inducing the increase of their own interests, but benefitting their compatriots as well. The slogan is, "Help to win the war."

Therefore, Gentlemen in the retail fish trade, a little more enthusiasm! Please.

NEW LUNENBURG CRAFTS.

During 1917 the following schooners were built at Lunenburg, N. S., for the fishing fleet: The Alicante, Capt. Milton Romkey; G. A. Rhuland, Capt. Clarence Myra; Frances Louise, Capt. Lorraine Backman; Bernice Zinek, Capt. Dan Zinek; Irene Corkum, Capt. Leo Corkum; and there is one for Capt. Freeman Corkum, and one for Capt. Emiel Mack, a knockabout, to be completed this month.

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

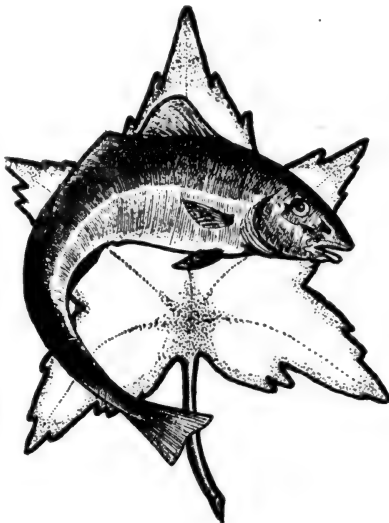
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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, MARCH, 1918

No. 3

LAKE ERIE FISHERMEN'S ASSOCIATION MEETING.

This issue of the CANADIAN FISHERMAN is largely devoted to the proceedings at the Annual Convention of the Lake Erie Fishermen's Association. This Association, which is an affiliation of the Canadian Fishermen's Association, deserves the highest praise for the progressiveness and development shown in its organization, and a perusal of the proceedings will reflect most creditably upon the class of men who comprise its membership.

The Convention clearly shows the advantages of co-operation among our fishermen and fish dealers, and should be a shining example to other bodies of men engaged in the fishing industry of the Dominion to organize themselves into a similar association—either distinct, or as a branch of the Canadian Fisheries Association.

To the Lake Erie fishermen we wish every success and a continuation of their progress.

WANTED—A DEPUTY MINISTER OF FISHERIES.

The time has come when our fisheries administration should have a Deputy Minister devoting his whole time to fishery matters. Under Colonel Ballantyne, the present Minister of Marine and Fisheries and Naval Service, there is a Deputy for marine affairs, but Mr. Desbarats acts as Deputy for both Fisheries and Naval Service.

The administration of the Naval Service is of sufficient importance to take all of Mr. Desbarats' time and undoubtedly it does. The fisheries cannot possibly receive the attention it might from a Deputy who is saddled with two important administrations. Mr. Desbarats is a most capable gentleman and has handled fishery matters exceedingly well considering that he is a civil and naval engineer and not an ichthyologist nor trained in technical fisheries work. In advocating a separate Deputy for fisheries we are making no reflections upon Mr. Desbarats' administration of the work.

Within the last year or two, Canada's fishing industry has developed enormously, and from now on it must be fostered and taken care of by a Departmental head who is thoroughly acquainted with our fishery resources and who is au fait with all branches of its administration. To our mind, the right man for the position of Deputy Minister of Fisheries is William A. Found—at present Superintendent of Fisheries.

Mr. Found is a comparatively young man who has grown up in the Department and is as well acquainted with our fisheries as it is possible for any man to be. He has the executive ability and the necessary training for the position, and logically, he is in line for the promotion. Resolutions have been made from time to time by various bodies advocating the appointment of a Deputy Minister of Fisheries. The CANADIAN FISHERMAN endorses all their resolutions, but we want to see no political appointee placed in the job,

or a gentleman who has devoted his life to fisheries work placed under some ex-M.P. with a mortgage on his farm and the pressing need of a Government salary to help pay it.

We hold no brief for Mr. Found, but we hold a mighty big brief for the fisheries of Canada, and we want to see them administered properly and by a man who knows something about them.

AN INTERNATIONAL SCIENTIFIC FISHERIES COMMISSION.

The time is ripe for Canada, the United States and Newfoundland to get together and unite in supporting and appointing an International Scientific Fisheries Commission. There is much to be done in the development of the fisheries of the Pacific, Great Lakes and Atlantic, and only an International Commission composed of the best authorities available can do the work.

The fisheries of North America are enormous in extent, but exceedingly poor in both industrial and scientific development. There is no international policy, scientific research or standardization of any kind. Cohesion is lacking, and all scientific work done to date has been individual and local and of but little benefit to those who actually require enlightenment.

Among the many subjects which might be taken up by a Commission are comprehensive classification of our fishery resources; a complete survey of the various fishing grounds, and the information gathered supplied to the fishermen. Text books on various technical fishery subjects require to be written. Salting, curing, packing, and canning of fish; utilization of fish waste; modern fishery methods; navigation and boat building; undeveloped fisheries; artificial propagation and conservation—all are subjects which require investigation and publication in forms readily understandable by those connected with the industry.

The possibilities of such a Commission are enormous. The agenda of the work it might do would fill this magazine, and its benefit to the North American fisheries would be as vast as its possible scope.

Let all those interested in the fisheries of the three countries mentioned give heed to the idea and work for its consummation. Now is the time to commence its establishment.

ACTION FOLLOWS INTERNATIONAL CONFERENCE.

Quick action has followed the sessions of the International Fisheries Commission which were reported in our last issue. The United States has now agreed to allow Canadian fishing vessels to run their catches direct to U. S. ports and dispose of their fish without restraint of laws or tariffs.

This is certainly a great concession to our fishermen, but at the same time, it is a boon to the United States who are badly in need of all the fish they can get. Apart from that aspect, the action is only logical, as Canada will invariably play the part of producer while the United States will ever be a consumer. Greater development of our fishery resources is Canada's best policy and this can only be adequately done by steam trawling in our salt water fisheries.

There is only one fear which arises in our minds regarding the new ruling, and that is: "Will the home

market be neglected by our fishermen, and will the prices in Canada rise to U. S. market levels?" The demand for fish in Canada at the present time has reached the highest tide in the history of the trade, and it certainly wants to be kept well supplied. However, the producers in Canada have not, as yet, voiced this fear, and it is probably groundless. A large quantity of fish from the "broken trips" of American vessels will be sold in Canadian ports now that reciprocal privileges are extended; our largest producers have their own trawlers to take care of their trade, and when the huge fleet of Boston steam trawlers now building is delivered there ought to be plenty of fish coming in for the U. S. market.

It is a good thing to have the privilege of wide markets for our fish and we can see nothing but good in the move.

DEVELOPMENT AND CONSERVATION.

The Marine and Fisheries Department has shown considerable activity in the right direction of late and are to be highly commended for it. Now and again, soporific influences seem to impregnate the Department, as it does all Government Departments occasionally, and we, as an independent journal with the best interests of the fisheries at heart, have been carpingly critical of these periods of somnolence. However, we are fair enough to give credit when credit is due.

One good move to increase production is the ruling that purse seines will be allowed for the seining of pollock on the Atlantic coast. In the Bay of Fundy and on the Cape Shore pollock school in vast numbers similar to the mackerel, and the only way to catch them when schooling is by seining. Herring fishing around the prohibited areas at Grand Manan, N. B., will now be permitted.

Conservation of the lobster is mentioned elsewhere in this issue, and shad fishing in the Bay of Fundy and tributary waters is now prohibited for a period of four years from March 1st. Our shad fishery will thus get a chance for rehabilitation.

The Government has forbidden the netting of pike perch at the spawning grounds in the Canadian part of Lake Champlain, making the Canadian practice conform to the laws of New York and Vermont.

Halibut heads from the Pacific coast will be allowed the privilege of the two-thirds transportation rebate now obtaining on all fish other than halibut and salmon to British Columbia, Alberta, Saskatchewan and Manitoba points. Quite a little trade has been built up already in the marketing of halibut heads and the transportation assistance will help to prevent a tremendous annual waste.

The Fisheries Department officials have our best wishes for continued progressive developments during 1918.

CANADIAN FISHERIES ASSOCIATION ANNUAL CONVENTION.

The Annual Convention of the Canadian Fisheries Association will be held in Halifax, N.S., on the 6th, 7th and 8th of August. Previously the Annual Meeting was held in February—a bad time of the year for most members—and lasted only a day. Members felt that it

was hardly worth while to travel any distance to attend a one day session. The winter season had its discomforts in travelling, and business usually called for unremitting attention. Then again, the ladies strenuously objected to hubby's pilgrimages to conventions—the very name seeming to suggest a plausible excuse for indulgences in all the forbidden delights. The latter reason is suggested lightly, but a close analysis might reveal that it is of paramount importance, and the drawback to larger attendances.

The Association, as it gets older, becomes wiser. This year the Convention will be held in the good old summer-time. It will be staged in a pleasant country and a hospitable city, and will last for at least three days. Most important of all, the ladies of the members' families will be invited to come along. The 1918 Convention will be the best ever—a get-together gathering of the industry from coast to coast—and a vacation trip with business and pleasure combined.

Halifax is one of the oldest cities in Canada. It is the pioneer fishing port of the Dominion, and contains a large number of those engaged in the industry. It is an excellent vacation centre, and our convening there will also be something of a tribute to a city which is arising from the devastation of a frightful calamity. The Association has shown its good-will towards Halifax in the generous subscription made for the aid of those blinded by the disaster. Our Convention in August will constitute a further tribute to a city which has been the cradle of our fisheries.

Plans are being drawn up by the C. F. A. Executive to make the Convention the most momentous gathering in the history of our fisheries. World-wide authorities on fishery matters will be invited, and subjects discussed which will have most important bearings on the future development of the industry. Delegates from kindred fishery associations and local C. F. A. branches from Coast to Coast will be in attendance, and in addition to becoming acquainted with the Atlantic fisheries, these gentlemen will be able to give their views on the general policy to be adopted in the development of our fisheries as a whole.

Apart from business, it is the aim of the Executive to provide entertainment enough for the members and their ladies that the Convention might prove a pleasant vacation trip to all present. Railroad transportation will be arranged for members travelling from distant centres, and Halifax will undoubtedly afford a welcome to the representatives of an industry which is destined to become one of Canada's greatest national and economic resources.

Every person interested in the fisheries, whether a member or not, is invited to Halifax for the Convention. **REMEMBER THE DATES—AUGUST 6th, 7th and 8th—AND MAKE YOUR PLANS TO ATTEND.**

A NEW STAR ON THE HORIZON.

The three essentials to the development of the fisheries are man power, brain power and capital. Brain power, which finds its best expression in capable administration and direction, whether in the Government, corporation or firm, is the connecting link between the other two. Without it man power is helpless and inefficient, and capital, if attracted at all, is wasted and lost.

It is therefore a source of much satisfaction when a new force appears on the horizon of our fisheries, and those of us who had an opportunity of observing how Mr. Samuel Squires handled a difficult situation at the annual meeting of the Lake Erie Fisheries Association, recognized at once that a new force had entered the Fisheries Department of the Province of Ontario.

For years the fisheries of Ontario lay dormant under the supervision of men who were liked for their good fellowship more than they were admired for the strength of their administration. During recent years much substantial progress was made by the late Deputy Minister Sheriff. But failing health for a while limited his efforts, and finally about a year ago deprived the Province altogether of his capable services. One of the first acts of his successor was to advise a policy, which while it may be thoroughly sound, has sent a shiver through the capital and labor engaged in the industry, thus creating a condition that is not in the best interests of a maximum production of fish and a healthy development of the fishery resources of the Province.

Mr. Squires has already demonstrated his ability to straighten things out in the right way and swing the fisheries of the Province of Ontario in line with the big developments that are taking place in this industry from the Atlantic to the Pacific. With the vigorous and well-advised policy of the Food Controller at Ottawa, working in close co-operation with the Federal Department and the departments in each of the Provinces, the fisheries of Canada, during the coming year, will give the Allies a contribution of food fishes beyond expectations. But to do this every Government Department requires the guiding hand of its strongest men. Mr. Squires is a new man in the Department of Fisheries at Toronto, and hence is a junior. But it will be a great mistake if his advancement is hindered by an adherence to promotion by succession.

THE NEW SECRETARY OF THE CANADIAN FISHERIES ASSOCIATION AND DIRECTOR OF THE HALIFAX CONVENTION.

Early in 1917 the British Navy claimed and readily received the services of Captain F. W. Wallace, who, up to that time had, as Editor of the Canadian Fisherman and Secretary of the Canadian Fisheries Association, guided the new movement in the development of Canada's fisheries, which was inaugurated in January, 1914, when the value of increased fish production to the conservation of beef and bacon was recognized by the Canadian Food Controller, and he required the services of the most capable and experienced person in fishery matters, the British Government, at the request of the Food Controller, released Captain Wallace to take charge of this new and important work.

The C. F. A. and the Canadian Fisherman consider Captain Wallace as being simply loaned for temporary work, and look forward to the time when he will return to the helm of his own ship.

In the meantime there is much important work to be done, particularly in preparing for the annual meeting of the Canadian Fisheries Association, which

will be held in Halifax on August 6th, 7th and 8th. Between now and then there should be a full and free discussion of all phases of Canada's fisheries—scientific, educational and economical, and as regards their provincial, federal and international aspects, in the hope that the reports and recommendations which will come out of that meeting will form a valuable guide to the future development of Canada's fish resources. Every section of the industry from the Atlantic to the Pacific should be represented at that meeting, and there also should be representatives from the industry in the United States and Newfoundland, who are interested with Canada in the deep sea fisheries off the coast of North America, and in the inland waters along the boundary between the United States and Canada.

To prepare for and get together such a convention will require the services of a staff under the direction of a person possessing a special knowledge of the industry, and having a wide acquaintance among the men engaged in it. Captain Wallace's present duties preclude him from undertaking this work, and Mr. J. J. Harpell, President and Managing Director of the Industrial & Educational Press, Limited, has been asked and has consented to do it. Until August 15th Mr. Harpell will be Secretary of the Canadian Fisheries Association and the Director of the Halifax Convention. Mr. Harpell will begin at once to organize for this important event, which can be made an epoch in the history of Canada.

MR. O'CONNOR—PLEASE NOTE!

High cost of Living Commissioner W. F. O'Connor, in a recent statement to the Press, states "that he notes a disposition to accumulate large stores of fish. He does not yet pronounce this unjustifiable, but requests suspension of judgment while he develops certain facts. It would be improper to suppress the figures meanwhile. If the circumstances justify it, he will refer to the matter again." The figures are:—Fish, all varieties (in storage) on March 1st, 1917, 7,895,083 lbs.; March 1st, 1918, 12,819,598 lbs.—an increase of 62.3 per cent.

The fishing industry of Canada is not afraid of the "suppression" of figures meanwhile. Mr. O'Connor's statement carries an innuendo which is misleading, and before making any remarks whatever on the increased fish stores, he should make enquiries into the reason first, instead of giving out a statement which will be taken by the public to mean that there is "something rotten in the state of Denmark"—or in the fish trade.

In our last issue we published an editorial on the necessity and advantages of cold storage in the fish business, and nothing more need be said on that point; but for Mr. O'Connor's and the public's information, we would point out the following facts which fully justify any increased accumulation of fish in storage.

Since May, 1917, the Government has been urging increased production of fish by our fishermen. Our fishermen have responded to the limit. Since July 1917, when the Food Controller urged Canadians to use more fish and release beef and pork for overseas, the demand for fish in Canada has increased from 75 to 100 per cent. This unusual demand would justify increased stocks of fish in storage, for if the demand for certain varieties—winter caught fish for instance—is to be supplied, the cold storage is the only place from which to procure these fish during the period

they are not fished for.

The fish trade in Canada cannot use cold storage for holding fish for profiteering purposes. There is no money in frozen fish. The bulk of the accumulations referred to are for the purpose of taking care of the Lenten trade, and storage stocks will be pretty well cleaned out by the end of the Fast season.

Summer fishing is coming on now with huge catches of fish in sight. All the storages in Canada could not hold the productions, and only the Overseas, and export trade will prevent a glut.

The public are prone to imagine that large stocks of fish held in storage are for the purpose of keeping up the prices. In so far as the fish business is concerned, this is erroneous. There is no money in storage fish as investigation will readily prove. There are better profits to be made on strictly fresh fish.

Then again, the great production may be cited as a reason for cheaper fish. Fish is but little dearer today than it was prior to the war, but the cost of gear, labor, ice, etc., has gone up enormously, and greater production has not lessened the cost.

Statements from a public official like Mr. O'Connor should be carefully made. The public is easily stampeded by innuendos and half-truths, and an unwarranted prejudice against the fish trade by reason of such statements will simply mean that our producers will cater to the export market rather than be led into a controversy started by the erroneous statements of Government officials.

The demand for fish in Canada has only been stimulated by careful nursing on the part of the trade, the Department of Marine & Fisheries and the Canada Food Board. The High Cost of Living Commissioner can wreck the whole home market by making public a few such statements as the one quoted.

LAKE ERIE FISHERMEN'S ASSOCIATION DELEGATION.

A delegation of the Lake Erie Fishermen's Association, composed of Messrs. Ponsford, Short, Van Order, Crewe, Westcott, Brown and Hoover journeyed to Ottawa on March 6th, and waited upon the Marine and Fisheries Department and the Canada Food Board.

At the Food Board, the delegation signified their willingness to co-operate with the Government in every way to increase the production of fish. The need for additional labor to operate the Erie fisheries was strongly urged and the exemption of fishermen from military service recommended. Improved transportation facilities by the Pere Marquette Railway was one of the points brought up as tending to aid production. The Chairman of the Board promised to give all the assistance in his power.

A plan to utilize the Lake Erie fish tugs in the Atlantic fisheries during the winter season was also discussed and the matter will be carefully investigated as to its feasibility. Some twenty tugs, it was estimated, could be brought down to the sea-board in the fall for gill-netting out of Atlantic ports.

TO FIX HALIBUT PRICES.

A meeting will be held at the Lasalle Hotel, Chicago, on March 21st, between representatives of the United States Food Administration, the Canada Food Board, and Canadian and American producers and wholesale handlers of Pacific Coast halibut. The object of the conference is to fix maximum wholesale prices for

halibut and possibly retail prices also—the prices to be fixed periodically.

A change in the method of purchasing halibut cargoes will also be made and the custom of bidding on the medium fish and taking the chickens and overs at 50 per cent less than the highest bid revised.

Preliminary regulations were drafted in Seattle recently by Canadian and American producers in conjunction with the U. S. Food Administration and Canada Food Board officials. The regulations, which have to be international to be effective, will be finally ratified at the Chicago conference.

RETAIL FISH DEALERS TO BE LICENSED.

All retail dealers in fish, must, on and after May 15th, operate under license from the Canada Food Board. Neglect to conform with the law incurs severe penalties. The regulations are as follows:

That the licensee shall not buy, contract for, sell, store or otherwise handle or deal in any food or food products for the purpose of unreasonably increasing the price, or of restricting the supply, or of monopolizing or attempting to monopolize either locally or generally any food or food products.

That the licensee shall not destroy any food or food products which are fit for human consumption, and shall not knowingly commit waste, or wilfully permit preventable deterioration in connection with the storing or sale of any food or food products.

That no licensee shall, directly or indirectly, knowingly buy any food commodities from, or sell any such commodities to, any person required to obtain a license from the Canada Food Board, and who has not obtained such license.

That the licensee shall place on every letterhead, contract, order, acceptance of order, invoice, price list and quotation issued, the words "Canada Food Board License Number" followed by the number of the license, and shall show the name of the licensee or licensees under which business is carried on.

That all licensees may be required to make reports monthly, and as often and at such times and in such form as may be in writing directed by the Canada Food Board, showing the stock on hand or in transit to order of licensee, and such other information as may be required by the Canada Food Board from time to time.

That every licensee shall keep such books, invoices, vouchers and other papers and records as will enable the Canada Food Board, or any person by them thereunto authorized, to verify any report or statement that such licensee is required to make to the Canada Food Board.

The following shall be the fees to be paid for licenses granted under this order:

When the value sold does not exceed	\$20,000 per annum, \$2.00.
When the value sold does not exceed	\$40,000 per annum, \$4.00.
When the value sold does not exceed	\$60,000 per annum, \$6.00.
When the value sold does not exceed	\$80,000 per annum, \$8.00.
When the value sold does not exceed	\$100,000 per annum, \$10.00.

and an additional \$2.00 for each \$20,000, or fraction thereof, of the value sold in excess of above figures.

That all licenses shall expire on the fourteenth day

of May in each year.

That licenses are not assignable or transferable without the assent of the Canada Food Board.

That licensee shall give notice in writing to the Canada Food Board of any change of address, or of any change of the management or control, or of any change in the character of the business licensed, within ten days of such change or changes made.

THE LOBSTER FISHERY.

We have it upon good authority that lobster canning will not be suspended this season. The suspension was suggested by the Canada Food Board to save tin-plate and divert the lobster fishermen into other, and more essential branches of the fishing industry or into agricultural labor, but enquiries elicited the fact that all preparations had been made by the canneries for the coming season and great financial loss would ensue were the fishery prohibited at this time.

However, the Marine and Fisheries Department have made a change in the lobster fishing regulations, effective at the end of this season, whereby a size limit of nine inches is placed on lobsters taken on the coasts of the Maritime Provinces west of Halifax. The announcement states that, while the regulation may have the effect of closing the canneries, it will, in a few years, put more money in the pockets of the fishermen, as well as conserve and build up the industry. In the past the practice has been to ship lobsters nine inches long and over to the United States live lobster markets, and send the small ones to the canneries. This practice, however, has been telling on the supply of lobsters, which has been declining from year to year. Lobsters do not lay eggs until they are about nine inches long, and the number of eggs produced increased rapidly with the size of the lobster.

DEVELOPMENTS IN THE WHALING INDUSTRY.

Canada is forging ahead in developing the whaling industry of the North Pacific not only from the standpoint of oil and fertilizer, but also as a desirable food. The Victoria Whaling Company has absorbed the North Pacific Sea Products Company of Seattle, and the American Pacific Whaling Company, thus bringing under one ownership a fleet of eighteen vessels and six whaling stations. The President of the new amalgamation is William Schupp, of Toronto. and W. A. Lawson, of Vancouver, is Vice-President.

This revival of the whale fishery is a cast back to the days of the Greenland fleet of Dundee, and the South Seamen of New Bedford and Nantucket, but steam vessels and bomb guns have replaced the daring and hazardous ventures of the old-time ships and barks with their whale-boats and hand-driven harpoons. The old-timers "flesed" and "tried out" their captives at sea—cutting the carcasses adrift for the sharks and gooneys to feast upon, but the modern whaling outfit tows the whale to a station where nothing is wasted—not even the meat.

Whale-meat has received a lot of publicity of late, and it is destined to become a staple article of diet, fresh, frozen or canned. The flesh of the whale is not unlike coarse beef and is decidedly palatable. We have sampled it and have no hesitation in saying that it will obtain a good market.

Progress in whaling and the utilization of whale products might very well be extended to the Atlantic,

PISCATORIAL PARS.

The Canada Food Board has been interesting itself in procuring supplies of line nets and twine from Great Britain for use in the fisheries. Priority is only given to shipments of fishing gear on the recommendation of the Fish Section of the Board. It is reported that the Board will not interest itself in gear for sporting use.

Samples of sole, brill, witches, and skate from the Pacific were received by the Canada Food Board in Ottawa recently. Quantities were distributed to the Premier's household, several newspaper men, and placed on the menu of the Laurentian Club. Those who tasted the fish avowed they were excellent and worthy of a permanent and ready market. These fish will be on sale throughout the West at the uniform prices of 9 and 10 cents per pound under arrangements made by the Canada Food Board.

We have sampled Atlantic Grayfish put up in cans by the Gorton Pew Company, Gloucester. Knowing our old camouflaged friend by experience and reputation, we were rather prejudiced. The first taste, however, dispelled all illusions. It is an excellent product and we predict that it will eventually rank with the best grades of canned salmon. If you haven't tried it, do it now.

Capt. F. W. Wallace, of the Fish Section of the Canada Food Board will visit the Pacific Coast shortly to look over various aspects of the fisheries there. An expert motion picture camera man from the Pathe-scope Company, Toronto, will accompany him to sea on the Prince Rupert trawler and it is hoped that a good motion picture film will be produced for circulation throughout the West as part of the Food Board's campaign to popularize Pacific flat-fish and cods.

Mr. J. B. Feilding, F.Z.S., is at present in Prince Rupert looking into the possibilities of utilizing fish offal and waste and manufacturing fertilizers, cattle feed and oils.

THE LATE MRS. F. W. WALLACE.

The readers of the Canadian Fisherman, who have not already been advised, will, we are sure, learn with sincere regret of the death of Mrs. Wallace, wife of Captain F. W. Wallace, who passed away on February 22nd, after a brief illness.

Mrs. Wallace belonged to that comparatively small and all too-rapidly diminishing school of strong, thoughtful women, whose true worth is not so well measured in terms of their own deeds as by the influence and inspiration which find expression in the doings of others. The influence of her life will therefore live after her and grow "as it rolls from soul to soul."

On behalf of its many readers the Fisherman extends to Captain Wallace their deepest sympathy in his great bereavement.

SHOULD WE HAVE COMPULSORY FISH INSPECTION?

To the Editor of The Canadian Fisherman:

Dear Sir,—Under the headlines "Should we have Compulsory Fish Inspection," I may say there is only one answer a fair-minded fisherman can give and that is give us compulsory inspection and give it quick. Under the present conditions a large amount of fish is wasted; a large amount of money is thrown away and coopers spend their time and labor to make a barrel hardly fit to pack apples in, let alone salt and pickle, man's food. How can we praise and blow about our fish if this state of affairs continues?

Let us take a look, Mr. Editor, at two grades of fish. One man will come to his store with his catch of fish, and perhaps it will take 4 or 5 hours to get these herring ready for salting, and all this time the sun is doing its work to make these an inferior quality. Then the salting begins and they are thrown into old tubs and barrels, and as the man thinks he has gone through the process of salting, an old oiljacket, salt bag, or board, goes on the head to protect them from weather. Then they go to the dealer who gets his barrels with a hole in them big enough to put your finger through which he will plug with anything he can get his hands on. Then the seams are more apt to get a piece of his old condemned shirt than a piece of flag. If a hoop breaks, he will smash up a flour or other barrel and make a hoop of these and then will have the face to say his herring is good. But let us go along further and we find another man who has spent hundreds of dollars to make his place fit to accommodate a barrel of herring, and from the time his fish is in his boat till they are paid for by the buyer his sole aim is to make them as good as possible—salted and packed with the greatest of care, barrels re-hooped and caulked, soaked and he satisfies himself that they will hold the pickle until they reach his market which is all you can expect from the class of barrels in use now. But let us send them to the dealer to ship, and the man with rusty, oily herring in a barrel with old flour barrel hoops, broken head, leaky seams, and enough rags to stuff a rag doll will get as fancy a price as the man that looks after his fish and does his best to give his fellow-man a decent fish to eat. Here lies an affair that can only be remedied by Compulsory Inspection. By this we can then put them to the front of other countries' fish stuffs and make the herring a success.

I am sir, yours respectfully,

WILFRID BAKER.

Liscomb, Guysboro Co., N.S.

The sittings of the International Fisheries Commission will be resumed in Seattle early in April when Pacific Coast questions will be taken up.

The T. Eaton Coy., Toronto, are selling fish retail by the ton. Almost every week they feature fish in huge quantities at low prices. Recent daily sales were 10 tons frozen haddock at 10 cents lb.

Schr. "Bay State," of Gloucester, stocked \$7,600 in a week's haddocking trip recently. The crew shared \$183 clear to a man. These fishermen have no Union and sell their fish by auction.



The Fishes of Lake Erie

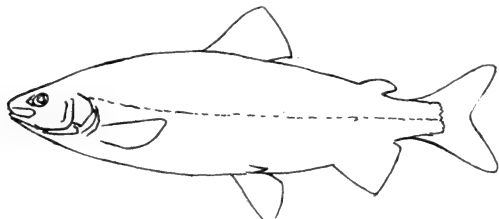
By PROFESSOR EDWARD E. PRINCE, LL.D.,
M.A., D.Sc., F.R.S.C., Commissioner of Fisheries
for Canada, Ottawa.

Lake Erie forms a middle link in the chain of the Great Lakes system and differs from all the others in its shallow character, its warmer average temperature, its abundance of fish-food, and above all, its amazing productiveness in fish. Its level is 13 feet lower than Lake Huron, and its outlet is down the swift Niagara river, which bounds over the world-famous falls, 150 feet high, at its eastern end, and thus it presents all the conditions for a constant flow of water from west to east embracing practically the whole body of the lake. Although it is supplied by no Canadian rivers of large size, apart from the Grand River, the whole out-flow of Lake Superior, Lake Huron and Georgian Bay, may be said to find its way into Lake Erie by the St. Clair and Detroit rivers. Its shallowness and moderate temperature are favorable for spawning, and for feeding, and for abundance of fish generally.

About twenty kinds of fish occur in Lake Erie, leaving out of account numerous minnows and small species, and of these twenty kinds, ten species may be said to rank amongst the best and most valuable in the market.

Whitefish.

The whitefish of Lake Erie are quite distinct from those of Lake Ontario, Lake Huron, and Georgian Bay, and are the highly esteemed species called scientifically *Coregonus albus*, which are of great importance commercially. By the smaller head, more angular form,



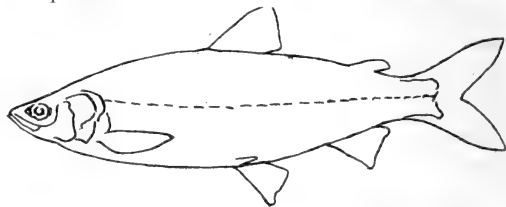
COMMON WHITEFISH.

higher shoulder, and a more marked white-olive color, it is distinguished from the whitefish of other lakes. These latter whitefish, called *Coregonus clupeaformis*, have a small elliptical, compressed form of body, a very slight shoulder hump, excepting in large specimens, and the back is always dusky, with more or less

distinct streaks along the scaly sides. Both species occur in Lake Erie, but the latter is less abundant. The Lake Erie whitefish range from 1½ pounds, or 2 pounds, to 4 pounds or 5 pounds, and very rarely 9 pounds or 10 pounds, although 20-pound specimens have been reported, and they rank first in quality and market value, and owing to their moderate average size, 2 pounds to 2½ pounds, they are much in public favor.

Lake-Herring.

Closely related to the whitefish is the important lake-herring, really a lesser whitefish, of which several species occur in Lake Erie. The smaller lake her-

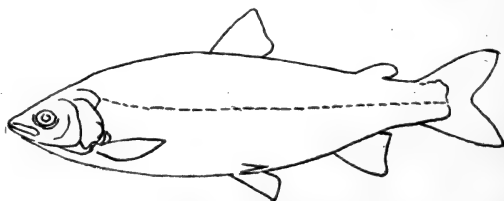


LAKE HERRING OR LESSER WHITEFISH.

ring, *Argyrosomus*, or *Leuciththys*, *artedi*, as scientists call it, is 12 inches to 14 inches long and about 8 to 12 ounces or more in weight, and until the "jumbo herring" began to be plentiful, about 20 years ago, it was the staple fish caught in Lake Erie, especially in the United States' portions of the Lake.

Jumbo Herring.

This large lake-herring was at first regarded as a mongrel fish, a hybrid between the whitefish and the lake-herring, but scientists have decided that it is a distinct species, *L. eriensis*. It may reach a length of 18 inches, but 13 inches to 14 inches is a common size,

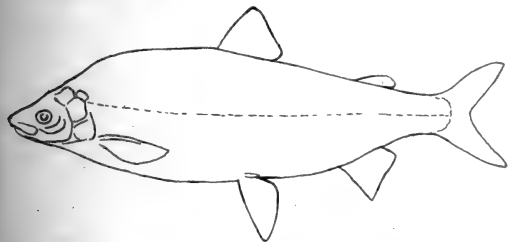


JUMBO HERRING.

and a weight of $1\frac{1}{2}$ to $2\frac{1}{2}$ or 3 pounds is general. There exist some reasons for the belief that it was a hybrid, because at some United States hatcheries, whitefish eggs have at times been fertilized by using lake-herring milt, and occasionally the reverse method has been adopted, as at Put-in-Bay Hatchery, Ohio, where about 600,000 eggs of herring were fertilized with whitefish milt, in 1892, and 200,000 of the fry were planted in Lake Erie. Some of these fry, placed in private ponds in Indiana, reached a length of 2 inches in about three months. Although the "Jumbo herring" have been marketed very frequently as whitefish, they can easily be distinguished by the sharper snout, because in the whitefish the nose is very blunt.

Lake Erie Blueback.

The third kind of herring is the common blueback, *L. cisco huronius*, really the Lake Huron species, although it occurs in Lake Erie. It has a pointed head and a slender tail, but the body is rounder than the other species, while the small finger-like, fatty fin on the back, a little in front of the tail, is comparatively large. The fish is inferior in flavor and more dry than the Lake Erie herring. The Lake Ontario



LAKE ERIE WHITEFISH.

herring, or Cisco, does not occur in Lake Erie and is recognized by the laterally compressed long body and other features, and must be taken with a small-meshed net, unlike the lake-herring. The typical Lake Ontario species is the Bloater or Long Jaw, the dark colored *L. prognathus*, found mainly in deep water, 300 feet or more. There has been a common saying that Lake Erie was once a whitefish lake and then degenerated into a herring lake, though at one time the walleyed pike or yellow pickerel was a most important fish, but it is now very much scarcer than formerly.

Walleye and Blue Pickerel.

The walleye or yellow pickerel ranges from 2 pounds to 15 pounds in weight, while the related species, the blue pike or pickerel, is much smaller, rarely exceeding 1 pound or 2 pounds. The blue pike became much more plentiful than the yellow pickerel, and there was a general desire amongst the fishermen to decrease its numbers by unrestricted fishing so that better fish should have more favorable chances of increase. At the present time the catches of the smaller (blue) pickerel exceed the highly esteemed yellow pickerel. 2,568,900 pounds in 1916-17, valued at \$25,300 were taken of the former, as compared with about 600,000 pounds of yellow pickerel, valued at \$60,000.

Both species have white, flaky, flesh of good flavor, and owing to the hard skin and thick scales, they keep well and reach distant markets in much better condition than more delicate species of fish.

Sauger.

The sauger or sand pickerel, known by its grey or sand color, and by the distinct dark patch at the root of the breast fin, is inferior in importance, though considerable quantities are annually caught. Like the other species, its flesh is white and has good keeping qualities, making it a desirable commercial fish. All the pickerel family are perch-like in shape, the mouth well armed with teeth, and the two erect fins on the back provided with spines. They are spring spawners, whereas the whitefish and lake herring are fall spawners. Being known as pickerel, or in Quebec as dore, some confusion has arisen because the name pickerel in the United States is very commonly used for the long nosed pike or jackfish.

Lake Trout.

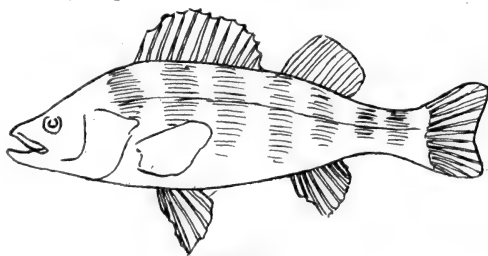
The lake trout may almost be omitted, although in the adjacent lake, Lake Ontario, they were at one time a highly important fish, and are still of considerable value in Lake Huron, Georgian Bay and Lake Superior. A few tons only each year are captured in Lake Erie.

Sturgeon.

The sturgeon, which is called *Acipenser rubicundus*, is according to English law a "Royal fish," and has long been one of the most valuable of Canadian food fishes. It was once quite plentiful on the United States side, especially off Erie County, New York State, and later it was found abundantly in the vicinity of Point Pelee and Pelee Islands at the west end, and they have always been taken in the Detroit River and Lake St. Clair, possibly having migrated up from Lake Erie to their spawning grounds. Sturgeon 120 pounds to 150 pounds were not uncommon years ago, and later 90 pounds to 100 pounds became the average weight, whereas now a 40-pound or 60-pound sturgeon is considered a good fish, and brings a high price for its flesh, fresh or smoked, caviar or eggs, and the bladder and internal membranes, which are used in the manufacture of isinglass. It is a common thing for fishermen to say that a good sturgeon is as valuable to them as a cow.

Yellow Perch.

The yellow perch was at one time regarded with contempt in Canada, and efforts have been made, and are still made, to exterminate it, but it has become commercially important in Lake Erie and is abundant in



PERCH.

shallow waters. Great quantities are taken, nearly 800,000 pounds being the annual take on the Canadian side. It is one of the sweetest of pan-fish, though rather full of bones, and its never failing "biting qualities" render it welcome to the angler. A large perch may reach $1\frac{1}{2}$ to 2 pounds, although the main catches are

smaller. Its shapely form, yellow color with black cross stripes, and its exceedingly prolific character, have made it an economic fish of importance.

White Bass.

This species, *Roccus chrysops*, is now included in the commercial catches of Lake Erie, and is by some regarded as a good table fish, though it has never been esteemed in Canada. Its bright silvery scales and 6 to 8 dark longitudinal stripes, along each side of the body, give it an attractive appearance and to the angling novice, it is quite an esteemed species.

Black Bass.

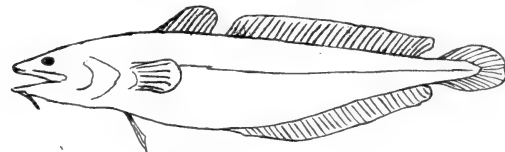
The two species of black bass, *Micropterus*, are not, properly speaking, commercial fish; but are, nevertheless, excellent fish on the table, and in spite of fishery regulations, have always been handled in the past, and probably still reach some markets. They range from 2 pounds to 8 pounds, although Dr. Henshall tells of a 10-pound fish caught in New York State, which measured 25½ inches long and 19 inches in girth. Famous bass fishing grounds are in Long Point Bay, and in the Pelee waters at the west end, but they are very generally distributed.

Sheephead.

The sheephead or drum fish, *Aplodinotus grunniens*, received very little attention until recently, but it now ranks as an edible fish of importance. The high back, coarse scales and large size, 4 pounds to 5 pounds, or even 15 pounds to 30 pounds, in weight, renders it conspicuous in the catches shipped to the United States' markets. It was formerly wasted and received no attention from Canadian fishermen, excepting when they extracted from its head, the pretty white earstones like ivory, which were made into ornaments, such as cuff links, etc. Its flesh is of somewhat inferior quality.

The Burbot or Ling.

Another despised fish is the Burbot, lake eel-pout, or ling, *Lota maculosa*, usually weighing 1 pound or 2 pounds, though sometimes 30 pounds to 40 pounds, or more. The somewhat slimy skin with small scales, deeply imbedded, the large mouth and ponderous head, and the snake-like dark markings on the side, with a small barb on the chin, make this fish unattractive, and account for its unpopularity. No doubt to show



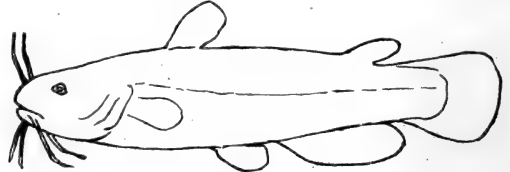
FRESH-WATER LING.

their contempt for it, the fishermen often call it the "lawyer," a name given also to the Bowfin. The ling belongs to the cod family, and the flesh is white and palatable. Indeed, it is a fresh-water cod, and should rank high amongst our food fishes, and is rapidly becoming recognized. At my suggestion, the Ontario Fish Commissioner, Mr. Kelly Evans, had some prepared and placed on the market at 5c per pound, seven years ago, and it sold so well that repeat orders were received for it. The United States' Fisheries Bureau has recently issued display cards for fish-dealers, urging its utilization. "Its flesh is white,

and flaky, and firm, and in Europe it has been highly regarded" the placard affirms, and according to recent reports, the sales of burbot in the United States' fish markets have greatly increased. There is no reason why this fish should be rejected, thrown on the land as fertilizer, or fed to pigs, when its edible qualities are once recognized.

Catfish.

The bull-head and catfish family are related. They are all good food fish, but the best of all, for the table, is the large channel catfish, with its firm, white flesh, excellent flavor, and few bones. The smaller species are rich in flavor, and when fresh very red



CATFISH.

in color, owing to abundant blood, but they are used only to a limited degree in Canada, while they sell at a good price in United States markets "headed, skinned and cleaned." Ontario exports nearly \$50,000 worth of catfish to the United States each season.

Pike and Maskinonge.

The long-nosed pike or jackfish, and the maskinonge, are the "sharks" of our fresh-water lakes, and over 45,000 pounds are caught in Lake Erie annually. The wolf-head, formidable teeth, and long small-sealed body, with powerful tail and single back-fin, all combine to make the long-nosed pike a terror in our lakes and rivers, and detested by the fishermen. When the weather is cool, it is a well-flavored fish, having



PIKE OR JACKFISH.

plenty of meat, and the bones are no trouble, but in warm weather and on muddy, weedy ground, it is far from appetizing. The related maskinonge is not only an excellent food fish, but is a fine game fish, and a forty-pounder gives great sport.

Carp.

The German carp must now be included in Lake Erie food fishes of importance. Though, years ago, fishermen complained bitterly on account of its introduction into United States' waters, it has now spread over the Canadian parts of the Great Lakes, especially Lake Erie, and a regular carp fishery has now been established. A number of varieties occur, but all alike are characterized by the deep body, massive build, sucking mouth, and pig-like habits. They breed fast, grow quickly, and reach 10 pounds, 15 pounds, or even 30 pounds weight, much more quickly than other fish. The bones are very numerous, though clothed with a mass of flaky flesh, which can be prepared for the

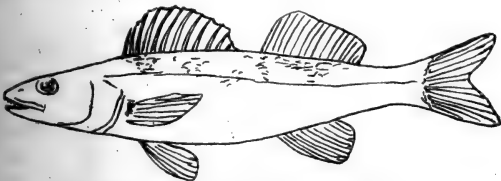
table in many attractive ways. Smoked, salt carp are very good.. It belongs to the sucker family, in which are included a vast variety of species.

Buffalo Fish.

The Buffalo fish, *Ictiobus*, has recently come into demand, especially amongst foreign communities in the United States, but is a coarse and not very well-flavored fish. The mullets, suckers, and other soft fish (called "poisson mou" in Quebec), are really related to the carp family, and in the opinion of many much superior to the German species at the cold winter months.

Mixed Fish.

The carps, suckers, etc., just referred to, are included in what are called the "mixed fish," which total to nearly 2,000,000 pounds per annum, and the price at 4 cents per pound represents about \$80,000 which was formerly lost, when these fish were not utilized, but merely thrown on the dump.



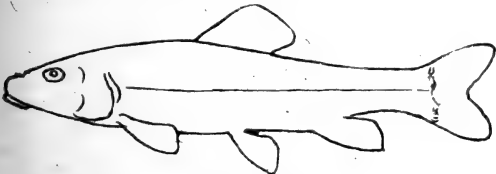
PIKE-PERCH OR YELLOW PICKEREL.

Bowfin.

The bowfin or lake dogfish, *Amia*, is even coming into use as food, though by most fishermen it was regarded as the last fish likely to appear on the table. It is a curious fish with a dog-like head, large coarse scales, long dorsal fin, but often of an agreeable green color, with a black spot on the fin, so that it presents attractive and unattractive features at the same time, but its unattractive features have prevailed, thus causing it to be thrown away by fishermen, or left to die a lingering death on wet, shallow shores, or wherever it has been cast, for it is tenacious of life, owing to a lung-like swimming bladder possessed by it, which serves as an air-breathing organ. It has actually now found its way into the list of food fishes.

Billfish.

The improved reputation of the bowfin was recently gained owing to the great demand for fish of all kinds, but it is not likely to extend to the billfish, *Lepisosteus*, which looks more like a small crocodile than a fish. Its body is long, cylindrical, and covered with a coat of hard mail. The lengthened jaws, pro-



COMMON SUCKER.

vided with teeth, gives it a reptilian appearance, and the meat is said to resemble solidified sand in flavor and texture. To naturalists, both the bowfin and the billfish are most interesting species. They belong to a very ancient order of fishes. Both appeared in

the waters of our planet long before any other kinds of fish now living came into existence, excepting the sturgeon. Their record goes back to geological times long passed away, and though we may not eat them, we can regard them with interest owing to their curious structure and their ancient lineage.

Conclusion.

It is curious to compare the relative commercial importance of various species of Lake Erie fish over a period of years. Out of the series of fishes described in this article, ten principal kinds rank as follows, according to the amount of the catches by Canadian fishermen:

	Pounds.
1. Lake Herring	5,210,500
2. Bluepike or Pickerel	2,538,900
3. Whitefish	1,086,100
4. Mixed fish	1,081,200
5. Carp	782,300
6. Yellow Perch	769,200
7. Walleye or Yellow Pickerel	599,200
8. Pike or Jackfish	437,000
9. Sturgeon	67,600
10. Catfish	22,900

In 1895, when the International Commission reported to the United States' and Dominion Governments, the herring and blue pickerel occupied the first and second places respectively; but the whitefish was seventh, though it is now third, (1,086,100 pounds in 1916; 359,100 pounds in 1906; 126,300 pounds in 1896); but carp was eleventh instead of fifth; yellow perch were fourth instead of sixth, walleyed pike were third instead of seventh, pike were fifteenth instead of eighth, sturgeon and catfish were ninth and tenth as they are now, apparently holding their own. For a really accurate estimate, however, of the relative increase or decrease over a period of twenty years, the total catches of both United States and Canadian parts of Lake Erie would have to be compared. One of the most interesting facts is the marked increase in the whitefish "takes" each season: the maintenance of the supply of lake-herring, and blue pickerel, and the rising into importance of the kinds of fish mentioned above, which were formerly despised and wholly neglected.

QUICK FOOD PRODUCTION.

Paste this fact in your hat when talking about Food Production. It takes six months to produce a car of wheat; a year to produce a car of pork; two years for a car of beef, but it only takes TWENTY-FOUR HOURS to produce a car-load of fish. In seven days, under ordinary conditions, a steam trawler could land 140,000 lbs. of fish. Within a day or two, the whole shipment could be frozen, packed and ready for shipment overseas — seven carloads of 20,000 lbs.

If present conditions could have been foreseen a year ago, cold storages and trawlers could have been secured and frozen Canadian fish poured into Great Britain at prices cheaper than meat. Fish is the only quickly procurable food-stuff in the world to-day which is included in the diet of civilized peoples. That's an undeniable fact.

Annual Convention of the Lake Erie Fisheries Association

The third annual convention of the Lake Erie Fishermen's Association was held in St. Thomas, on February 18th, 19th, 20th and 21st, and in point of attendance, and every other way, was by far the most successful convention since the association was formed in 1916. The Lake Erie fishermen were splendidly represented there, and, in addition, a number of leading men connected with the fishing industry of Canada and the United States. The convention headquarters were at the Grand Central Hotel, while the City Hall was placed at the disposal of the Convention for the different sessions.

The Convention was opened officially on the afternoon of the 18th instant, by an address of welcome from Mayor E. Horton, who turned over to President A. E. Ponsford the keys of the city.

Mr. President and Gentlemen of the Lake Erie Fishermen's Association: It is a pleasure for me this afternoon to welcome to our city the members of the Fishermen's Association, and you are to-day, and have been for the past two years, taking your proper place in the world of production from the natural resources of this Province. I greet you as kings along the line of production.

I am pleased to note that our Provincial Government has already taken steps to assist you in your endeavours, and I note by this morning's press that an appropriation has been made of \$123,000 for this Province to aid the fishermen in a still greater production in building and equipping cold storage plants in different parts of the Province. I also note that they are asking for 20 per cent. of the catch from all the fishermen in the Province to assist the people of the Province in keeping down the high cost of living. You will also have to face competition in the way of shipments by the Government into different parts of the Province, fresh fish from Northern Ontario. This is being done in order to conserve food so that the Allied nations may receive from Canada a larger proportion of food that can be exported than they have done before. When I tell you that the Allied nations have asked for 500,000,000 bushels of wheat by September 1st, 1918, and so far Canada has only been able to release 10,000,000, and the U. S. 90,000,000, it will give you some idea of the shortage that exists in the world to-day.

You have come here no doubt to discuss the many questions that affect your interests as fishermen, and I hope that your deliberations will be harmonious, and that your Convention of 1918 will go down into history as being one of the best Conventions that this Association has ever held.

Gentlemen of this Convention, we are delighted to have you with us as guests of our city, we trust that your stay will be a pleasant and a profitable one, and once more on behalf of the city I extend to you a most cordial welcome, and have no hesitancy in saying that you have the keys, and the city is yours. We trust that we may have the pleasure of having you with us on future occasions.

Mr. President, I thank you for the opportunity and the privilege of saying these few words to this Association.

In opening the business of the Convention, the President, Mr. A. E. Ponsford, of St. Thomas, welcomed the delegates in the following well chosen words:

Gentlemen,—It is certainly an inspiration to see such a large assembly of members of the Lake Erie Fishermen's Association at the opening session of our third annual convention.

I see before me many who have come from regions other than Lake Erie, and who have not been members of the Association before, to them, on behalf of the Association I extend a most cordial welcome, and we hope before the close of this convention that we will be fortunate enough to include them in our membership. We are pleased also to see so many visitors from the United States, and others interested in the fishing industry, and we assure them that they are most welcome.

The Association has made rapid strides since its inception in 1916: Every year its membership has increased substantially, until to-day it includes practically all the producers along the north shore of Lake Erie.

From the large turnout at this early stage of the Convention we believe that it will surpass any yet held. We have not only been successful in increasing our membership, but we have to a large extent realized the object for which we organized.

Prior to the organization of the Association the fishermen were divided into two factions. The Association has united these factions, and you now find yourselves working harmoniously, enabling you all to reap a benefit.

Through being members of the Association it leaves you in a position at all times to take up any grievance with the Government at Ottawa or Toronto, which so far has proven very satisfactory to this Association. You have a lot to be thankful for in the manner that the Government at Ottawa and Toronto are assisting in the way of hatcheries, and it stands you one and all in hand to see that there is more care taken with the handling of your spawn at the proper time.

Now we have many important matters to bring before the convention, we also have a number of important speakers who will address you on various subjects of interest outlined on the programme which we mailed to the members, so that we can assure all a busy and instructive session. Before proceeding further, I understand his Worship Mayor Horton wishes to address you and welcome you to our city, and we will now be pleased to hear from him.

The reading of the minutes and communications was next attended to. Letters of regret over their inability to attend the meeting of the association were read from Lieut. Ballantyne, the Deputy Minister of Naval Service at Ottawa, and Hon. T. W. Crothers.

A letter from the Canada Food Board, Toronto, was to hand stating that they were engaged in an extensive campaign to encourage the consumption of a pound of fish per week per person for the Dominion as a substitute for beef, pork and other meat needed for

the armies overseas. In order to attain this goal, they stated that it was essential that the fishermen co-operate with them and that increased production must be had. They urged the association to attend to the matter of proper spawning, as a first step toward greater production. A communication was also read from the Food Controller at Ottawa, Henry W. Thomson, urging upon the association the necessity of greater production in order that fish might be substituted for meat diets. He stated that it is imperative that the present supply be maintained and even enlarged, and in order to co-operate in every way he asked the fishermen themselves to use as little beef, bacon, and white flour as possible on their tugs, in the fish houses and also in their homes.

Mr. Cornell Objects.

Following the reading of this communication, Reeve N. S. Cornell, of Port Stanley, took the floor and stated that referring to the food controller's letter, he did not think that there were any fishermen of Lake Erie

the government, we lose the difference between 8 and 12 cents per pound. The average tug's actual cost of production of white fish is 12 cents. Yet we are asked to take eight cents for them, and not counting the depreciation in nets and other material, we furnish our own boxes which is 50 cents per 100 pounds and do our own packing, which is another 50 cents and then deliver them to the station for seven cents per pound. I am just as anxious that food should be produced in Ontario as any member of that government. They have encouraged farming by bringing in 1,000 tractors and have offered these machines to the farmers with the duty removed. We fishermen, with our limited knowledge, can see that this is the way to encourage farming. But we can't see how the government is encouraging fishing by setting a maximum price of seven cents per pound for white fish.

Election of Officers.

The election of officers for 1918 took place in the afternoon of the first day's session, and resulted in the re-election of the following:

Hon. President, Hon. F. G. MacDiarmid; President, A. E. Ponsford, St. Thomas; Vice-President, A. E. Crewe, Merlin; Secretary-Treasurer, H. A. Short, Port Stanley.

Executive Committee.

A. E. Crewe, Merlin; J. Pastorius, Kingsville; B. G. Westcott, Kingsville; W. D. Bates, Ridgetown; Herbert H. Hales, Port Bruce; Hy. Drumgole, Rodney; N. S. Cornell, Port Stanley; A. B. Hoover, Nanticoke; W. Goodchild, Amherstburg; Hy. Goodison, Cedar Springs; Chas. Ross, Port Maitland; Ed. Kochler, Dutton; A. S. Brown, Kingsville; A. McDonald, Port Stanley; W. F. Kolbe, Port Dover; E. Moss, Port Maitland; George VanOrder, Port Burwell; N. Ohmstead, Wheatley; B. Clay, Wallacetown; N. McAulay, Rondeau; F. Harris, Pelee Island; Milton Campbell, Leamington.

On Tuesday morning the St. Thomas board of trade conducted the delegates and guests on an inspection tour of the manufacturing plants of the city, commencing with the cold storage plants, and including the M. C. R. shops, munition plant, Nobility Chocolate Co., Just Wright Sho Co., and St. Thomas Packing Co. The guests and delegates were conveyed in automobiles. Following this enjoyable trip, there was a short executive and committee meeting in the Grand Central Hotel. A full description of the splendid cold storage plant, specially adapted for fish storage, will be found in another column.

Following their tour of the city, the Convention in the afternoon was addressed by S. L. Squires, superintendent of the sales department of the provincial government fisheries; H. Hinrichs, of Erie, Pa., president of the South Shore Fishermen's Association, and J. J. Harpell, president of the Industrial and Educational Press, Montreal.

Live Questions For Fishermen.

On Tuesday evening, Professor E. E. Prince, Dominion Commissioner of Fisheries, Ottawa, lectured before the representatives on the "National and International Questions of Importance for Fishermen." At the conclusion of his interesting address Professor Prince described a tour of the fisheries from coast to coast, using nearly 200 splendid limelight views in his tour. The pictures included scenes from the lakes



H. A. SHORT, Port Stanley,
Sec.-Treas. of Lake Erie Fishermen's Association.

but who are willing to conserve and strive for greater production if it is in their power to do so. "It strikes us, however," declared Mr. Cornell, "that though the government is urging us to conserve our meat and thus encourage the use of fish, they are not encouraging us in so doing by fining us \$5 a ton for every ton we catch over eighty. It is a well-known fact that three years previous to last year we went astern financially. There was hardly a tug or pound net fishery that paid expenses and yet we are encouraged to conserve food by being taxed. Although these men who sit in the high and mighty seats of the government have no doubt a superior intellect to ours, according to our weak judgment this does not seem right. As far as white fish are concerned, every time one pound is turned into

and rivers, and also exact reproductions, many of them photographic, of the different fish inhabiting the several waters and also different modes of fishing.

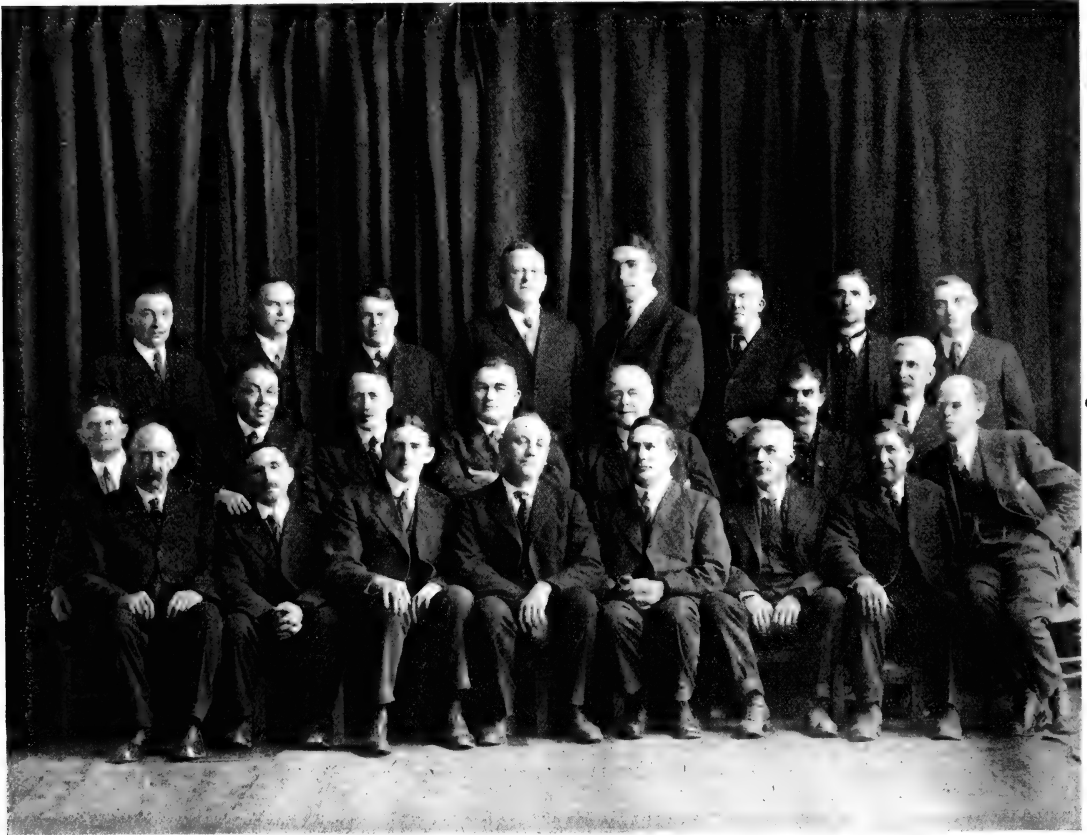
Fish Culture in Canada.

J. A. Rodd, Dominion Superintendent of Hatcheries, delivered an interesting address on the "Fish Culture of Canada," comparing the increased production of 1916 with years previous. He told of the great strides that had been accomplished since the government had taken over the matter of spawning and building hatcheries. He told the association that they must not kick if eggs are taken out of Lake Erie and placed in other waters as the Dominion had been shipping eggs from Manitoba to Lake Erie for some time.

Will Wait on Government.

Following Mr. Squire's address on Tuesday, the executive committee appointed a sub-committee to deal with Mr. Squires in connection with the blanket clause in the license this year.

The committee was composed of ten leading representative fishermen, and all expressed their views in connection with the matter. In all the committee brought out a very strong case, and on account of Mr. Squires not having power to deal with the several matters involved the sub-committee decided the best thing to do would be to send a committee to Toronto to wait on the Government. The committee appointed consists of A. E. Crewe, A. S. Brown, A. B.



OFFICERS, EXECUTIVE AND A FEW OF THE GUESTS OF LAKE ERIE FISHERMEN'S ASSOCIATION, TAKEN DURING THE ANNUAL MEETING, ST. THOMAS, FEBRUARY, 1918.

Bottom Row (reading from left to right): A. K. Brown; A. B. Hoover, Nanticoke; J. J. Harpell, Montreal, President Industrial and Educational Press; H. H. Hinrichs, Erie, Pa., President South Short Association; S. L. Squires, Toronto, Supt. Sales Department, Provincial Government Fisheries; H. Hales, Pt. Bruce; Harry Dromgole and H. A. Short, Pt. Stanley, Sec.-Treas., Lake Erie Fishermen's Association.

Second Row (sitting): E. W. Moss, Pt. Maitland, Ont.; B. W. Westcott, Kingsville; A. E. Ponsford, St. Thomas, President Lake Erie Fishermen's Association; A. S. Brown, Kingsville; N. S. Cornell, Pt. Stanley; William Goodchild, Amherstburg; Charles Ross, Pt. Maitland.

Back Row (sitting): Edward Koehler, Dutton; W. D. Bates, Ridgetown; A. E. Crewe, Merlin, Ont., vice-president Lake Erie Fishermen's Association; George Van Order, Pt. Burwell; Norman McAuley, Rondeau; J. E. Pastorious, Kingsville; E. Olmstead, Wheatley, and J. A. McDonald, Pt. Stanley.

Hoover, B. Westcott, George Von Order, N. S. Cornell, W. D. Bates, E. Olmstead, Chas. Ross, Ed. Kochler.

Wednesday, following the reading of the motion appointing the committee to go to Toronto, N. S. Cornell spoke to the convention on the advisability of moving that the committee be delegated to visit the Dominion Government at Ottawa to take up the question of dealing with the drydock built without the assistance of anybody in Port Stanley. Mr. Cornell went on to state that the drydock was a great benefit, as previously it had been necessary to take a boat to Cleveland and have it docked at considerable expense. The drydock was unavoidably partially wrecked in a storm last year, and he thought the committee should be empowered to ask the Government to make a grant for reconstruction of the drydock. He said they did not ask the Government to stand all the expense. A motion was adopted to this effect.

Would Exempt Fishermen.

Another motion of importance that was discussed and carried was that the Militia Department be asked to exempt from military service all persons engaged in the production of fish on the grounds that as producers of food, they are already engaged in work of national importance, and that instructions be given to appeal judges and exemption tribunals to grant exemptions to all experienced fishermen legitimately engaged in the fishing industry.

Mr. Cornell stated that he believed fishermen were just as important as farmers, if not more so, because it took very much longer to train an experienced fisherman than it does a farmer.

Co-Operation in Spawning.

Another motion that was discussed, and when put to a vote was carried unanimously, was that the Government be requested to enforce such regulations that will compel license holders to gather spawn in the fall of the year proper.

Mr. Rodd, Dominion superintendent of hatcheries, spoke on the matter of fishermen not co-operating to the full extent of their abilities. "Last year was greatly improved," he declared, "but there were still too many who did not co-operate." He suggested attaching a penalty to the river license, making it compulsory to gather spawn, with the option of losing license for three months. He believed that this would bring the delinquent fishermen to order and would keep up the spawning to the highest notch of efficiency. It is important to the country at large that you put back in eggs all that you take out."

He pointed out that a single individual hatchery in Quebec, privately owned, was kept in successful operation for 60 years, because they put back sufficient spawn and protected the fish and restricted the fishing season to a reasonable time.

Advocates Common Sense.

Respecting the penalizing of fishermen who did not collect spawn, many of the delegates present believed that a fine of \$100 or \$200 would be preferred to losing the license for two or three months.

N. S. Cornell stated that spawning and hatcheries were all right, but he believed that there should be a little common sense used by the Government along with all their science in the conducting of hatcheries. He told of visiting Ottawa, and seeing all their pretty hatcheries filled with trout, but there was a

paucity of white fish, yet white fish were far more essential than the trout. "It would take about 25 pounds of white fish to make one pound of trout," declared Mr. Cornell. "It is about like feeding sheep to wolves, yet which is the more valuable, wolf meat or lamb? Science is all very well, but for God's sake let's mix it. We must have more white fish hatcheries and less trout."

Many Noteworthy Moves.

The several other noteworthy resolutions that were discussed and adopted in every case, almost unanimously, by the association, were as follows:

"That Bert Westcott and A. S. Brown, of Kingsville, be appointed as instructors to visit the ports along the shore to show fishermen the proper methods of taking care of spawn and that the association pay all expenses." "If we do this," said N. S. Cornell, the mover, "we will put the situation in a shape that the Government have got to give us the hatcheries."

Mr. Rodd congratulated the association on the stand they had taken in appointing their own men, and in spending their own money in this way, and said that it showed the association were interested in their own welfare, and were not relying on the Government to do everything for them.

"That the Provincial Government be asked for a grant of \$500 in aid of the Lake Erie Fishermen's Association."

"That all township limits under gill net gas-boat licenses be done away with east of Point Pelee."

Elect Grievance Committee.

"That a grievance committee of five be appointed for 1918, one from each county as follows: Elgin, N. S. Cornell; Essex, B. W. Westcott; Norfolk, George Van Order; Kent, A. E. Crewe; Haldimand, Charles Ross; A. E. Crewe being appointed chairman."

Mr. Crewe, speaking about the duties of the grievance committee, stated that last season their principal trouble that had to be dealt with was transportation grievance, and the committee had been instrumental in bettering many conditions.

Another splendid motion that carried unanimously was "that any member having trouble with dealers in regard to payment of accounts, unfair deductions or any other matter which might tend to warrant credit being refused to dealers be reported to the secretary of the Association, and that the secretary send copy of this report to all members."

Want to Enlarge.

Another resolution of importance that was passed, read: "That the association have a proper register for registration of all members in attendance at the convention and that the secretary endeavor to arrange for reduction of transportation rates for members attending the convention. That secretary communicate with all license holders who are not now members of the association inviting them to become members."

A motion was also adopted "that secretary prepare and have printed a report of the convention, and that a copy be sent to all license holders on the lake."

Another read, "that the Dominion Government be requested to place two capable tugs on Lake Erie for the purpose of protecting Canadian fishermen." It was mentioned that the Government was asked for three tugs last year, but had been unable to supply

any. The association believed that the matter of getting two should be brought before their notice again as being one of great necessity.

The final motion read, "That delegates to Toronto call upon the Canada Food Board and take up with them the letter of February 16, dealing with increased production."

The business session was followed by a number of excellent addresses.

The Duties of Fishermen.

Mr. A. S. Brown, of Kingsville, the second speaker of the afternoon, told in his forceful style, "why fishermen should be interested in hatcheries."

Why Fishermen Should be Interested in Hatcheries.

Gentlemen,—Not being a fish culturist, but as a member of this association I will try and explain, from a fisherman's point of view, why fishermen should be interested in hatcheries.

My own opinion is that the hatcheries are the only salvation of the fishing industry in Lake Erie.

We are told by our best fish culturists, that for every fish egg hatched naturally, seventy-four are hatched at the hatchery, and the fry produced at the hatchery are just as strong and vigorous, and their chances for reaching maturity are just as great as are those hatched naturally, this being the case, the artificial



MESSRS. WM. LOGIE, B. G. WESTCOTT and
A. S. BROWN, Kingsville, Ont.

propagation is 74 per cent. above nature, why should not only fishermen, but every citizen of Canada be interested in hatcheries.

The federal hatchery at Put-in-Bay, O., claims to have planted in one season, 265 million fry, all done at a total cost of \$14,591.

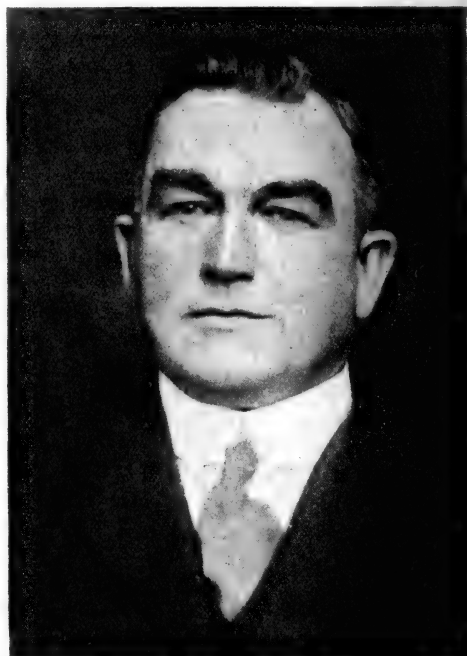
It is estimated that ten per cent. of the fry reach maturity, but we will put it lower, and say that one per cent. reach the size of $2\frac{1}{2}$ lb., the output of this hatchery alone would be 6,625,000 lb., at 15 cents per pound would amount to \$993,750, which is a little more than 6,810 times the cost of production, why gentlemen, this is paying us better returns, than the best gold mine in this country, why not invest.

From reliable information I find, that on the south shore of Lake Erie, the commercial fishermen pay in license fees a sum more than equal to the total cost of propagation and protection, I might mention that on the north shore of Lake Erie, the fishermen are paying a license fee, which is from two to three hundred per cent. higher than our American cousins, so why should we not be interested in hatcheries, and why should we not have more hatcheries to be interested in.

One Government official has told us that as soon

as we can fill the hatchery at Kingsville, and show that we can fill an additional hatchery, we will get it. Now, neighbour fishermen, listen; for once in our lives be serious, get interested; let us make up our eggs to fill the jars for the sake of filling them, but eggs to fill the jars for the sake of filling them, but with enough good eggs, properly taken, and properly taken care of, so that when the eggs are placed in the hatchery, that there will be little or none to be sorted out and thrown away. Remember, it costs more to handle eggs that have been improperly taken, than it does to handle those that have been properly taken.

Now, just a few remarks as to our hatchery at Kingsville, Ont. It was finished in the fall of 1916; there were several mistakes made in the construction, especially in the length of the intake pipe, and all the fault of not having a successful hatch that season was placed on the Department of Naval Service, for having chosen Kingsville as a location for the hatchery. It will be remembered that the hatchery at Kingsville was built to replace the one moved from Sandwich,



A. S. BROWN,
Pres., Northern Fish Co., Kingsville, Ont.

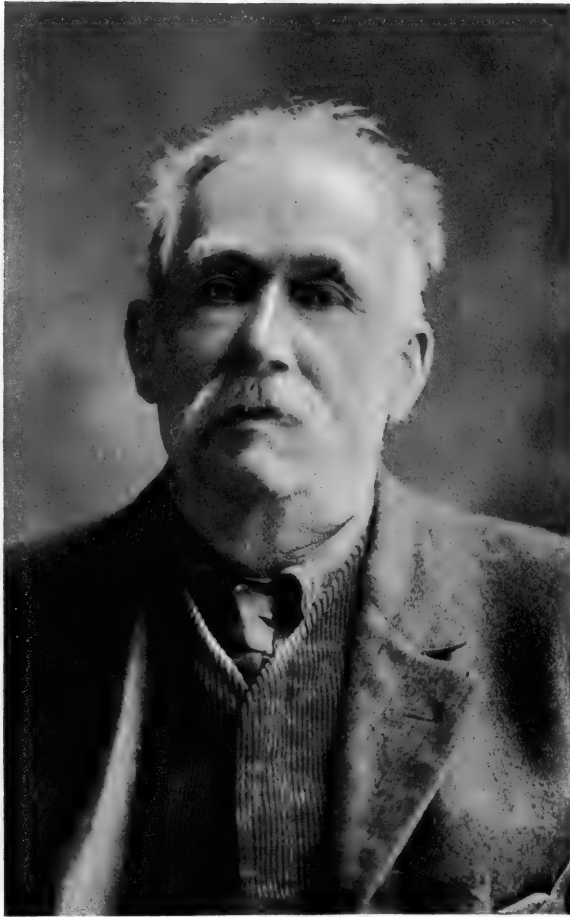
Ont., which is in the north riding of this county, so it is plain to be seen where the knocks came from. During the summer of 1917 the mistakes made in 1916 were rectified at the Kingsville hatchery, and I am pleased to report to this association that the Kingsville hatchery will hatch 70 per cent. this spring, which will help in no small way to replenish the supply of white-fish and herring in Lake Erie.

Mr. Adamson, the superintendent, and his staff have had up-hill work in getting this hatchery in operation, but as he remarked to me on one of my visits to the hatchery, it is a pleasure to labor at the work we love.



E. McLEAN, Wheatley, Ont.

Mr. McLean is a pioneer of the Lake Erie fisheries, having entered the business in that district over fifty years ago. He takes an active interest in the Lake Erie Fishermen's Association and was in attendance at its annual Convention at St. Thomas in February, 1918.



A. W. STAMMERS, Morpeth, Ont.

Mr. Stammers enjoys the distinction of being one of the oldest fishermen in the Lake Erie district. For forty-four years he has fished out of the Port of Morpeth. Mr. Stammers is still hale and hearty and is looking forward to a big catch during the coming season. He was present at the annual meeting of the Lake Erie Fisherman's Association, of which he is a member.

It is very interesting at this season of the year to pay a visit to the hatchery any day, for every day is calling day there, and have one of the staff take 3 or 4 eggs out of a jar, and place them in your hand, then as soon as the heat from your hand warms the egg you can see the little fish begin to move inside the shell; then looking at the hundreds of jars, with almost countless thousands of the little fellows almost ready to leave the shell and start on their journey back to the waters from which they were taken, again I ask you, why should we not all be interested in hatcheries.

Moved by A. B. Hoover, seconded by N. S. Cornell: That the Militia Department be asked to exempt from military service all persons engaged in the production of fish on the grounds that, as producers of food, they are already engaged in work of national importance, and that instructions be given to Appeal Judges and Exemption Tribunals to grant exemption to all experienced fishermen legitimately engaged in the fishing industry.

Moved by N. S. Cornell, seconded by Ed. Koehler: That A. E. Crewe, A. S. Brown, Geo. Van Order, B. G. Westcott, and A. B. Hoover be appointed a committee to go to Toronto and interview the Government on the question of Government contract for 20 per cent. of the production.

Moved by Thos. Morgan, seconded by W. H. McPherson: That N. S. Cornell be added to above committee.

Moved by A. S. Brown, seconded by Geo. Van Order: That the Dominion Government be requested to place two capable tugs on Lake Erie for the purpose of protecting Canadian fishermen.

Moved by N. S. Cornell, seconded by Chas. Ross: That this Convention recommend the Government making a grant to assist in the rebuilding of the Port Stanley Dry Dock, which was wrecked in a severe storm in the early part of December, and that the committee appointed to go to Toronto, go to Ottawa to take up this matter and the patrolling of the Lake.

Moved by A. E. Crewe, seconded by N. S. Cornell: That the Government be requested to enforce such regulations that will compel license holders to gather spawn in the fall of the year.

Moved by H. Dromgole, seconded by N. McAulay: That the Provincial Government be asked for a grant of \$500, in aid of the Association.

Moved by N. S. Cornell, seconded by Geo. Van Order: That B. Westcott and A. S. Brown be appointed instructors to visit the ports along the shore to show fishermen the proper methods of taking and taking care of spawn, and that the Association pay all expenses.

Moved by W. Goodchild, seconded by A. E. Crewe: That the Association have a proper register for registration of all members in attendance at Conventions, and that the secretary endeavor to arrange for reduced transportation for members attending the Conventions. That secretary communicate with license holders who are not now members of the Association, and invite them to become members.

Moved by A. E. Crewe, seconded by B. Westcott: That the secretary prepare and have printed a report of the Convention, and that a copy be sent to all license holders on the Lake.

Moved by W. D. Bates, seconded by H. Hales: That any member having trouble with dealers in regard to payment of accounts, unfair deductions or any other matter, which might tend to warrant credit being refused to dealers, be reported to the secretary, and that

secretary send a copy of this report to each member.

Moved by W. Goodchild, seconded by W. D. Bates: That a Grievance Committee of five be appointed for the year 1918, one member from each county as follows: Essex, B. G. Westcott; Kent, A. E. Crewe; Elgin, N. S. Cornell; Norfolk, Geo. Van Order; Haldimand, Chas. Ross, and that A. E. Crewe be chairman of the Committee.

Moved by A. S. Brown, seconded by H. Dromgale: That the delegation to Toronto call upon the Canada Food Board and take up with them their letter of 16th inst., dealing with increased production.

Moved by N. S. Cornell, seconded by Geo. Van Order: That all Township limits under gill net gas boat licenses be done away with east of Point Pellee.

Moved by W. Goodchild, seconded by Chas. Ross: That all fishermen holding carp licenses be permitted to catch suckers, mullets, catfish, grass pike, dogfish and bullheads on account of scarcity of food during the period of war, and that the Government allow this permit to take effect as soon as possible.

The Lake Erie Fishermen's Association finished up its third and busiest convention Wednesday night with many radical motions, adopted unanimously, and a vigorous protest under way against the government's drastic rider in connection with the 1918 license. A. H. Brittain, vice-president of the Canadian Fisheries Association, introduced the subject in his spirited address at the conclusion of the meeting.

Mr. Brittain's address came really as a message from The Canadian Fisheries Association to the Lake Erie Association. "From the Atlantic to the Pacific," declared Mr. Brittain emphatically, "our association has felt it their duty to protest this drastic measure the Provincial Government is trying to shoulder on the producers and the dealers in fish. This protest that was drawn up at the last executive meeting virtually speaks for every fisherman and dealer, either retail or wholesale, in the Dominion. It not only comes from those engaged in the fishing industry on the sea, but also to the Great Lakes of Canada.

Mr. Brittain placed a copy of the protest in the hands of the secretary of the Lake Erie Association, with the request that they adopt it. As the Association had already protested against the judicious rider, they resolved that they would place their complaints before the Provincial Government on the widely represented document when their special committee went to Toronto for that purpose. The protest of the Canadian Fisheries Association, "whereas the Ontario Provincial Government has been given publicity by the press as contemplating engaging in the production, handling and distribution of fish in direct competition with legitimate producers and dealers having capital invested in the industry, and whereas it is manifestly unfair to subject dealers to such competition in view of the fact that fishermen will not be issued their licenses except under certain binding conditions, including an undertaking to deliver a portion of their catch to the Government of the Province of Ontario at prices fixed arbitrarily by the Provincial Government which are less than the actual cost of producing said fish, which will result in restricting production.

"And, whereas, the Board of Canadian Food Control appointed by the Federal Government has entered on a propaganda for the substitution of fish for meat diet with the ultimate object of using the fish obtained from the dealers at these exceptionally low prices, the Canadian Fisheries Association protested and demand-

ed that a thorough investigation of conditions be made in the interests of the public and all concerned and that a copy of the protest be sent to the Hon. F. G. Macdormid.

This in part was the contents of the protest, which went further to state that the investigating committee should consist of producers and dealers, and those most directly affected by the measure proposed by the Government.

Must Discuss Matter.

"The Government must discuss the matter with the fishermen," declared Mr. Brittain. "I do not know of anyone in the Ontario Government who is specially qualified to carry on the fish business. They must deal fairly with us. The men who go out into every kind of weather at all times, those are the men who are entitled to a fair remuneration for their catch, and they are not getting it according to this deal. It is to your own interests that you appeal to the Ontario Government, and show them that they should first talk this thing over with those who are most deeply affected and work out ways and means. What we want is increased production. It is not only a question of eight cents per pound, it is a question of producing more. Therefore to encourage the fishermen, the distributors and retailers to produce more, they must be given their marginal profit."

In conclusion Mr. Brittain spoke on the pleasure it

gave him to address one of the best conventions of fishermen he had seen, and he extended a cordial invitation for the Lake Erie Association to affiliate with the Canadian Fisheries Association, pointing out the advantages they would receive. He was assured that the Lake Erie Association were planning on doing so.

Fish Statistics.

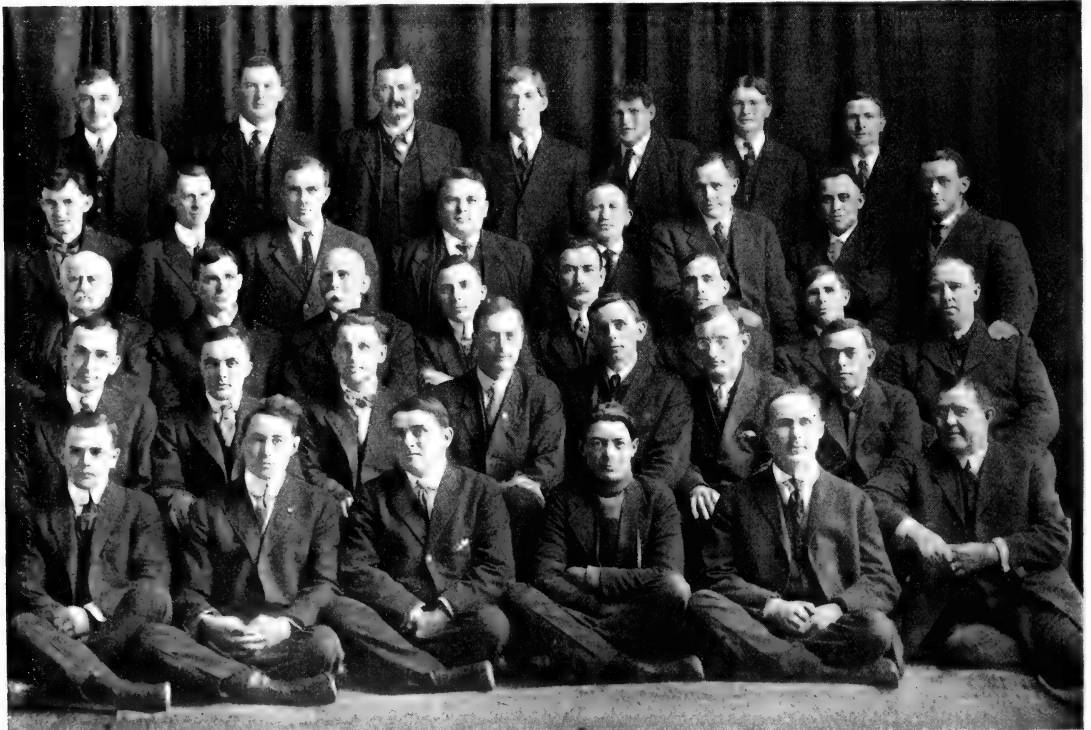
Dr. G. A. Huntsman, of the biological department, Toronto University, gave a most interesting lecture last evening on the fish found around the Government research bureau at St. Croix River, and around the Nova Scotian waters, near the Magellan Islands. Dr. Huntsman's lecture, which was illustrated with several limelight views, was based on scientific facts and told in language that all could understand.

Increase Rights.

Another resolution was adopted by the Convention Wednesday evening, it being that all fishermen holding carp fishing licenses for 1918 be allowed to catch other soft fish, such as suckers, dogfish, catfish, etc., as well.

A Formidable Showing.

In concluding the third annual Convention President Ponsford stated that he was proud of the convention this year, as the attendance was fully 90 per cent. better than last year, and it made a formidable showing of earnest, deep-thinking men, who had shown their business acumen in a number of noteworthy moves toward a closer federation during the coming year.



A group of Lake Erie Fishermen and their guests, taken during the Annual Meeting of the Lake Erie Fishermen's Association, St. Thomas, February, 1918.

Co-operation the Need of the Hour

By S. L. SQUIRES.

Supt. Sales Department Ont. Govt. Fisheries.

Mr. Squires addressed the Lake Erie Fisheries Association on the first day of the Annual Convention as follows:—

In considering the subject which has been allotted to me, I may wander from the usual and consider the subject from an unusual standpoint.

When co-operation is considered it usually takes the form of combination; and no matter how presented, or labelled, there is a mercenary objective, a question of self-interest.

Co-operation—or combination of interest—is not without its advantages. It has enabled the gathering under a single management of immense sums of money which have made possible the undertaking of great private enterprises to the advantage of the community and the nation, and usually to the profit of those interested.

Individual effort marked the last century. Men in same lines of business were in opposition. Business secrets were jealously protected and advantage was sought. The spirit of co-operation was uncommon, and by many classes was looked upon with suspicion.

This century has witnessed a closer co-ordination of interests; an appreciation of the advantages of pulling together, a realization of the truth of the old adage, "In Union is Strength."

The members of this association have learned some of the advantages, and now in a larger sense than we have heretofore thought necessary, I am convinced that co-operation is the need of the hour and a consideration of world conditions will help to bring home its importance.

Meeting in the comfortable quarters which we occupy, our understanding of world war is very vague, and the seriousness of the hour and the sacrifice made are scarcely appreciated.

We all know something of the world conditions, of the 25,000,000 men in arms, of every great world power being at war, that every continent is suffering from the horrors of war.

We know something of Britain's far flung battle line; of her armies fighting on the battle fields of three continents; of the immense expenditure of the best blood of the Empire; and the raising of unheard of amounts of treasure for the carrying on of the war.

Some of us know what it means to shake the hand of soldier brothers or sons, and as we consider the smoke of battle which darkens the noon-day sun or of the fires of war that redden the midnight sky, wonder when the war clouds will lift.

In this world struggle Canadians have done nobly. From a colony we have become a nation, and our soldiers have blazoned the word "Canada" on pages of history that time will never efface. The war has overthrown thrones; destroyed kingdoms and peoples, has changed systems and governments, has shown strength and weakness. Our ideas and ideals have changed; social orders have tottered and fallen, and the end is not yet. All this, as far as Canada is concerned, has been viewed from afar.

Bolshevikism is rampant in Russia—that country, which such a short time ago we had looked upon, if this was to be a war of attrition, as having man power enough alone to defeat the armies of the Central Powers.

I shall not try to describe the conditions in Russia. It is enough to say that a Government which does not recognize property rights, which repudiates debt, which divides the people in two classes—the class which has and the class which has not—taking from those which have at the point of the bayonet and killing many who have done no greater crime than to be the possessor of wealth is not a safe government to emulate. These things are happening, and law and order are not recognized. What has all this to do with us and the question of co-operation?

The world is hungry to-day. France has but a three day food supply and depends upon British ships to ward off starvation. Italy has been served from France's scarcity. Great Britain is on rations, and since the beginning of war the world's live stock has been depleted by 29,080,000 cattle, 54,500,000 sheep, 32,425,000 hogs—total 115,005,000; while the shortage of grain is almost as serious.

We in Canada are living in a Fool's Paradise—having squandered our resources, faring sumptuously every day, telling ourselves that we have plenty for years to come. Nevertheless, we should read the hand writing on the wall. We, too, may hear the "thou fool."

Sentiment knows no international boundary line. The British fleet cannot stop thought, and the social conditions in Russia may be in a measure the social conditions in Canada unless we adopt national co-operation.

What are the present economic conditions in Canada? Increased revenues, growing bank accounts, mushroom millionaires. Ontario alone spent last year in automobiles over \$30,000,000 and the cost of living was 50 per cent higher than the years before.

High cost of living is only comparative; if wages are high and work plentiful the higher cost of living being relative, there is no hardship. Three years after the close of the war will be the earliest we can expect the production to be sufficient to have supply equal to demand. The old law of supply and demand teaches that prices are regulated thereby. How about labor, again the law of supply and demand. The most optimistic anticipate a surplus of labor during the period of reorganization. Labor will be cheaper—living no cheaper, and then "having felt our power" (as was stated by a president of a labor union in Montreal) what will be the result?

If men continue to build up fortunes unmindful of their fellows, there will be a serious reaction. Fortunes! I hear the fishermen say, we are not in that class.

Wealth is illusive and mysterious, and if sought, is always considered by its possessor to be the measure of the other fellow. The money made by some fishermen last year would look to the average laboring man as an immense fortune. You have been prosperous;

prices have been high; demand has been created for your product which demand was not created by you. We trust you may continue in your prosperity.

Now for co-operation! The fishermen in the country are a national necessity. The farmer was never as important as to-day. The laboring man is recognized as absolutely indispensable. The manufacturer cannot be disposed of. The need of the hour is the recognition of every other man's usefulness and sincerity, and the crucifixion of our own selfishness. Jealousy which exists between city and country, between rich and poor, between the Government and the governed, must be discouraged, while a period of national co-operation is established. The sacrifice and suffering of this war is but the travail of the world giving birth to the new democracy.

Sir Robert Borden says, "The Government, anxious to save beef and bacon, turned to fish. Fish is the only flesh substitute for meat which we have available in large quantity; and even if it costs as much or more than meat, every Canadian who, so far as he is able, eats fish and thus releases beef and bacon, is performing a patriotic duty and will be helping the men at the front."

When investigating the possibility of placing fish on the market at popular prices, it was discovered that men were getting rich out of fish, and they were not all fishermen either. The spread in price seemed unfair. Average price paid fishermen 1917 at four points on Lake Huron, Georgian Bay and Lake Superior was: whitefish 7.99; trout 7.06; pickerel 7.14; herring 2.41. And still the consumer was paying from 20c to 30c for these same fish.

Do you think the consumer should have some consideration? Do you not think it was time for the Government to do something?

England uses 56 pounds of fish per capita annually. Scotland uses 110 pounds of fish per capita annually.

The entire catch of fresh water fish in provincial waters as reported in 1916 was 34,892,108 pounds, 80 per cent. of which is estimated as having been exported. If these statements are correct, basing Ontario's population at 2,750,000, we only used 2½ pounds per

capita of our fresh water fish that year, and to reach England's average, if our only source of supply was our own waters, one would require 4½ times the entire catch of 1916. The Government have a sympathetic appreciation of the work of the fisherman. The Honorable F. G. MacDiarmid is the fishermen's friend. He knows the hazard of your occupation and wishes to place you in a position where you may be able to obtain a fair remuneration for your services. He recognizes your rights and champions them. But a Government to-day who are unmindful of the rights of the people has forefeited its right to rule. The people in such times must be considered, and cannot be expected to make sacrifice out of proportion to others.

The demand for fresh water fish is increasing. The Government want to co-operate with the fishermen and with the consumer, having a due appreciation of the rights of each, obtaining for the consumer a fair share of the fish which the citizen looks upon as a part of his heritage, at a price which seems just and equitable.

20 per cent. of your fish, if required, and at prices which are fair average, should not seem a hardship. If you were asked to give that amount of your fish, your sacrifice could not be considered in the class with those who have given their lives to retain for you the liberties which you enjoy. If our liberty is taken away, what else matters?

Your hearty co-operation is expected, and any willingness to do our bit without coercion is the strength of democracy. Assurances are coming to us from different parts of the province indicating the fishermen's desire to do their share in this world crisis and we expect the fishermen of this association to lead the way.

President Ponsford said that despite Mr. Squire's assuring words, he believed that a doubt still existed in the minds of many of the fishermen regarding the wisdom of the government's move, many of them perhaps thinking that it would have been just as well to have consulted them before setting the price, and because of this he thought it would be well if the fishermen got together with Mr. Squires and endeavored to come to some understanding.

The South Shore Association

Address of Mr. H. Hinrichs of Erie, Pa., president of the South Shore Association, of Lake Erie Fishermen in the United States, at the Annual Meeting of the Lake Erie Fishermen's Association, St. Thomas, Ont., February 22nd, 1918:—

I desire first to express my pleasure at being able to renew the many acquaintances formed a year since, and to say that I appreciate greatly the opportunity afforded me to listen to the experiences of the practical men, as well as to hear the reports from the labors and studies of the scientists, of which I note from the program, several are to be with you on this occasion. I have listened with more than ordinary interest to the masterpiece of eloquence and logic by Mr. Squires. Only too well do I realize the tasks that confront him in the prosecution of his manifold duties.

When I was here a year ago I could not help but conclude that, for the time being at least, the fighting had been temporarily transferred from Flanders to St. Thomas. It appeared as if a battle royal was being

staged between the pound-netters on one side and the gill-netters on the other. Since my return to this city, I have been agreeably surprised to find nothing that would indicate a renewal of these old hostilities. I am sincere when I say, I hope that the old feeling has been overcome for all times, and that each side realizes that it must and should have the good will and co-operation of the other in order to accomplish the best results, especially at this present most critical time, when so much depends upon the services rendered the government by the individual as well as by organized industry.

Since your last convention, we on the other side have entered into the world war. You had already been active participants for more than two years, whereas we had been affected only indirectly, and that mainly through deriving pecuniary benefits from the same. Now conditions over across the lake have become very similar to yours. We are both fighting to attain the same goal in as quick a time as possible

and we both are called upon, in consequence thereof, to contribute with blood as well as with wealth, to make this a possibility. These burdens will not grow any less, but it is certain that as the war continues they will become greater. The fishermen, along with all others, have their sacrifices to make and their burden to carry. The extent of this burden will be determined to some degree by your own voluntary co-operation. I know from personal experience that it is not only desired, but requested by the government officials, that the men of experience and judgment in the various lines of professional and commercial activities, give to these officials the benefit of their advice, in order to aid them in distributing the burdens as equitably as possible, and to adopt such rules



MR. H. HINRICKS.

and regulations which will insure the greatest degree of efficiency with the least amount of hardships. No doubt there are among the fishermen those that feel the burden ought to be placed on to others and not themselves. I have no patience with these, but would advise them strongly to chose other fields for their activities, as they will soon realize that the burden upon them will become materially greater than those imposed so far. They must bear in mind that they are not fishermen by compulsion, but that they have of their own free will chosen this particular line of industry from many others.

When I was with you a year ago, I believe I told you of the efforts that were being put forth on the South Shore to form an Association. This has come about. Nearly all dealers from Buffalo to Toledo have joined themselves into what is termed the Fresh Water Fish Producers' Association. The aim of this association is to better the general conditions surrounding commercial fishing.

Everyone interested in this line of industry has from experience learned that abuses have crept in, which have resulted in heavy losses. One of the most extensively practised abuses has been with the credits. This has been taken up by our association first, with the result, that every member is in a position to avail himself of information, which will enable him to avoid the pitfalls which had been set for his competitors. Every unsatisfactory experience of one member, be it refusal to accept shipment, of refusal to pay for the same, or deduction or slow pay or many other that may be mentioned, is reported to me as president of the association, and by me transmitted immediately to all members. Specially prepared cards are used for imparting this information. These cards kept in alphabetic order will furnish a ready reference to all members.

A uniform plan for handling all shipments that go forward C. O. D. has been adopted with eminently successful results.

In order to be in a position to conduct the affairs of one's business in the most successful manner, it is essential that one knows what is being done in the same line of business elsewhere. In the fishing business we find it is of great value to one dealer to know what the production of fish is at other points along the shore. We have a plan which will enable each member to know accurately the quantities of fish produced by the members in the other ports. While this exchange of information has been practised before the formation of our association, it is found, nevertheless, to be more reliable now. It is needless for me to lay special emphasis on the importance of this particular service.

All of us are fully aware of the fact that the constant removal of fish from the waters will in time result in a depletion. This can be avoided by aiding and encouraging artificial propagation. Each producer can be of wonderfully effective service in this particular work. Our members realized this, and in consequence voluntarily bound themselves to aid in every way possible to insure the greatest possible amount of spawn being saved, and at the same time, fearing that the increased cost of labor would prevent the hatcheries from operating to their ordinary capacities, the association voted to defray such expenses connected with the artificial propagation as could not be met by the various hatchery appropriations. The very favorable weather, coupled with the bountiful supply, made it possible for the hatcheries to fill up to capacity, and keep the expenses within the amounts available for that purpose.

When the hatcheries were filled, and it was still possible to procure good ripe spawn, the employees were instructed to strip as many female and male fish as possible, fertilize the eggs, and then re-deposit the fertilized eggs in the waters. No doubt this will aid to some extent in increasing the future supply.

The conservation of the fish resources is not limited alone to the artificial propagating of fish, but it must

be carried out also in the taking of the fish. I make reference to the small and immature fish, of which so many are needlessly destroyed each year. The importance of this was realized by our association as is evidenced by the unanimous vote, authorizing the appointment of a committee of five of its members, which committee is instructed to make a very complete investigation of all fishing operations, suggest changes that would tend to eliminate the taking of the immature fish, and report such to the association, which in turn will be submitted to the various Legislatures as well as to Congress with the recommendation that the same be enacted into law. This investigation, in order to meet with success, must be absolutely fair and impartial, otherwise more harm than good will result therefrom. Everybody realizes that something will be done which will result in correcting unnecessary abuses along these lines. The pecuniarily interested ones can solve this problem themselves and with better all-round satisfaction, than those that are not familiar with the industry. I believe they have the opportunity now to do this, and if they fail to avail themselves of this opportunity they will find conditions in the future to be harder than would be absolutely necessary. It is easier to enact legislation to repeal or modify existing legislation, at least such has been our experience.

Individually all of us have some influence with our law making bodies, and can through extraordinary efforts prevent the enactment of absolutely ruinous legislation, but the law-makers persist in keeping at it, and the individual will soon capitulate. Collectively, through an association, we can hold out as long as the law-maker, particularly the one that has for his aim solely the mulcting of the business interests, without regard to merit or demerit of his proposals. We know that we have been successful whenever we have jointly undertaken the curbing of iniquitous legislation proposed. Our association contemplates taking care of all legislation directly affecting the industry.

Collectively we have been able to impress upon the proper authorities the importance of giving the fishing industry proper facilities for the transporting of the fish. While the result has not been entirely successful, nevertheless, we must admit, that compared with the experiences of the others, we have fared much better. The efforts of the association have had something to do with this condition.

After the United States had entered the war one of the first war measures to be framed was the Food Control Bill. The provisions of this bill directly concerned every producer and dealer in fish. Our association, at its Cedar Point, Ohio, meeting in July, realizing that we may possibly, as an association, be of service to Mr. Hoover, the proposed Food Administrator, voted to offer our co-operation, which was readily accepted. We have been in constant touch with the Food Administration since then, and have been asked to suggest ways and methods whereby this important fresh water fish industry can become of greatest value, not only as a food producer, but also as a food distributor.

Every member pledged himself to exert every possible effort to make use of every bit of available netting and to operate every boat it was possible to operate, with the result that the production last year was the greatest, at least in ciscoes, than what has been experienced for many years back. Considering the

high prices that were being paid for these fish to the fishermen, it required more than ordinary nerve to pile this production up into the freezers. Everybody realized his obligation to the Food Administration and continued to produce, whereas in normal times the curtailing of the production would of necessity have been resorted to. This resulted in a very large supply of frozen ciscoes. Accordingly it was reported to Washington. We were then asked to propose a method whereby the consuming public could be induced to make liberal use of fish as food, and thereby, conserving the more concentrated flesh foods, such as beef and pork, which it was desired to export to our allies and our soldiers across the sea.

The Food Administration assured us of their fullest co-operation, which included the free and almost unlimited publicity by the public press, including the dailies of the cities as well as the weeklies from less settled communities. Subsequent events have proven conclusively that this assurance has been fully carried out. The aid of the officials of the State of Pennsylvania was next solicited and I am glad to say that these efforts likewise met with full success. After that we selected those cities in the State with populations of 20,000 and over, arranged for meetings with the Federal Food Administrator for the county and the established fish dealers in the town. The aims and purposes of the U. S. Food Administration were explained, and the plans, so far considered, were detailed, and all present were urged to participate in the selling of a car of the fish, which would be sent in by freight in bulk, in that way receiving the advantage of the lowest transportation costs as well as eliminating the cost of the package. The fish were offered by the local fish dealers direct to the consumer from the car, without any service, such as thawing, cleaning, boning or delivering, at a price which, in comparison with the theretofore customary retail prices, meant a saving of from 40 to 60 per cent. to the consumer. The press put it up to the people of that community to patronize this car of fish, and called attention to Mr. Hoover's slogan, that every pound of fish consumed here meant another pound of meat to spare for across the water. The result was astonishing. People of all stations of life, from the occupant of the Pierce-Arrow limousine down to the foreign laborer with his basket on his arm, were gathered around the car and patiently waited their turn to be served. The consumption of fish was increased tenfold in these localities through these campaigns. It not only meant an increase for the lake fish, but the salt water fish shipments into these towns increased proportionately. Through these efforts has it been made possible to dispose of the vast quantities of frozen fish held in storage at the beginning of the winter season.

It must be admitted that the success could only have been attained through the publicity so freely furnished by the press, and it must be also admitted that this publicity cannot be expected for all future time. If we desire to continue producing in maximum quantities, we have to devise some methods of publicity which will have the same result as what the campaigns of this winter have had. Front pages of the papers are not for sale as advertising space. Paid for advertisements are very good success-producers, but the best and most substantial way is to augment these paid for advertisements with practical demonstrations on how to prepare and cook the fish in many different ways

it is possible to cook them. Have the time, taken up with the actual process of cooking, taken up with such interesting diversions as display of moving pictures which will depict the operation of the industry, commencing with the ice harvest, and include the setting and lifting of all kinds of nets, the packing, salting and freezing of the fish, and so forth, until the audience has had a complete view of the entire operation. By the time the movies are over, and the accompanying explanatory lecture has been concluded, the fish will have been fully cooked, and are ready to be distributed among the audience for sampling. If at about that same time a car or two, varying according to size of the city, has been placed at a convenient place, the contents of the same will find a ready demand. Such campaigns involve the expenditure of considerable monies, more than one concern, no matter how large, could undertake to defray, but as an association, it will be possible to undertake it without any great expense upon anyone of the individual members thereof. I believe that through it, it will be possible to bring the average consumption of fish per capita up to the amount which Mr. Squires mentioned as representing the per person consumption of fish in England. At least, I do not believe there is anyone present, who will have the hardihood to dispute the statement that there must be a considerably greater production than what is now, to supply the extra demand created by such a campaign.

In order to make any campaign on food, one resulting in success, it is essential that quality be al-

ways considered. It is to be regretted that not every-one engaged in producing fish realizes the importance of quality. If you induce a person to buy fish, and such purchaser is unfortunate in getting possession of a poor fish, it will be a very long interval between that purchase and the time when he may be in a mood to purchase fish again. It is one of the most deplorable conditions confronting the whole industry. When in New York a week or so ago, I was somewhat surprised to learn from two sources, both intimate friends of mine, that they returned to a certain producer on the North Shore more money for his fish, than what they realized from the sale thereof. They did this in order to insure a share of this man's production to themselves regularly, simply to be in a position to use these high quality fish as an aid in selling other fish of poorer quality. Such a condition should not exist. All fish produced out of pound nets should be of same quality, and all gill net fish should be alike, as far as quality goes. The trouble lies in how the fish are handled. I merely bring this out to impress upon all that it is ultra important that great stress be laid upon the handling and icing of the fish. With a supply of high quality fish on hand one needs not worry of what to do with them. They will sell themselves. An improvement in the average quality of the fish will increase automatically the demand for fish. So with the plans of bringing fish to the attention of the consuming public, the producing of a high quality article of food is of like importance.

New York City as a Market for North Shore Fish

By FRANK J. LYONS.

An address delivered at the Annual Meeting of the Lake Erie Fisheries Association, St. Thomas, Ont., 1918.

For an outsider to attempt to tell fishermen of the North Shore of Lake Erie anything concerning their product, may have the appearance of a fool treading where an angel fears to enter; it must be borne in mind, however, that in doing so, I have the advantage of being almost continuously in a market where immense quantities of North Shore fish are sold in a fresh state during the season of production, and where during the winter months frozen fish finds an active market.

At the outset one thing to emphasize is the importance of North Shore fish in our market. You know as well, if not better than I do, that there is always a demand for it, regardless of variety or the amount produced at other points. There is probably no time in the year when it will not command as high, and frequently a higher price than fish produced at other points. The reason for this is, that the fish of the North Shore has made a name for itself, whether offered fresh or frozen.

Regarding pound net fish there is little to be said other than that it is to be regretted that conditions are such that the supply is not greater. If poundnet fishermen produced twice as much as they do at pres-

ent, there is but little doubt but that it would continue to stand high in favor with discriminating buyers.

To the average fisherman a market is a market regardless of conditions either at the point of production or where the fish is sold. In former years, before conditions and packing of fish were looked upon as important factors in the disposition of the catch, the producer took his fish, packed it as his conscience or facilities permitted, shipped it to the nearest point where he thought he could find a market, and then waited for his returns. If the check received in payment met his expectations, it was a good market; if not something was wrong, and the commission man or wholesale dealer was viewed with suspicion.

Since then times have changed greatly; the fisherman has learned that the dealer is not always to blame when the returns are not large. The fisherman has learned that there are innumerable factors connected with the sale of fish, which in the past he was not familiar with, and which are of great importance in disposing of fish to the best advantage, be it fresh water or salt water. The fisherman now understands that quality goes a long way in determining the price of fish, that the man who produces the best stock, gets it

to market in the best condition, will receive the highest pay for his work in the shape of returns. As a rule fishermen, like those engaged in other lines of industry, are keeping pace with the march of progress, i.e., that those who best serve the interests of the wholesalers, commission men and consumers, are best helping themselves by so doing.

In that respect fishermen of the North Shore of Lake Erie have not been behind the times. They have been alert to recognize the importance of furnishing the best, not only as to quality of fish, but also in the packing and handling, and as a result they now occupy an enviable position in the freshwater fish industry of North America.

North Shore fish has been coming to the New York City market for probably thirty years. At that time the demand for fish was not as great as it is now, the population of the city was smaller by many millions of people, while the supply for this market was received from points much nearer home than now, when the Continent is being combed to secure a supply sufficiently large to meet the requirements of our constantly growing population.

When the needs of our city became such that the demand could not be met from nearby points, wholesale dealers began to look for other sources of supply—that was probably thirty years ago, at which time fish from the North Shore of Lake Erie, first made their appearance in our market.

New York City dealers were handling North Shore fish long before direct connections were established between fishermen of that section and our market. Fish was being received in the New York market for at least ten years prior to direct shipments being made from the North Shore. Whether the fish came first by way of Buffalo or through fishermen in Ohio is unknown to me. Some of the old time New York city dealers say that a Sandusky fisherman was the first to recognize the importance of the North Shore of Lake Erie, as a feeder for American markets. This far seeing fisherman, it is said, used to run a boat across the Lake and for years brought the fish to his own town from which it was shipped to other markets. Then a Buffalo concern entered the field as a competitor of the Sandusky fisherman, bringing the fish to that city, shipping to the New York market by express or freight as the demand warranted.

If competition was as great then as it is now, it is not likely that the practice would have continued for ten years without New York dealers trying to play in the game. As it was, when the demand for fish began to increase and the number of dealers began to grow, the more enterprising began to talk of getting fish direct from the producers, still no great activity was shown until one enterprising dealer, who has since drifted out of the business, established direct connections with the North Shore fishermen and from that time on, New York city became a popular market, our continually increasing demand being met by larger catches, until the North Shore is looked upon as one of the regular sources of supply by the New York freshwater fish trade.

From the North Shore of Lake Erie we receive Ciscoes or herring, Blue Pike, Hard Pike, Whitefish, Yellow Perch and sometimes Carp, the bulk of the production being ciscoes which are taken in the pound and gillnets. The impression prevails that the catch-

es of the former are the most desirable; there have been occasions however, when fish produced by the gillnet fishermen have not only been the equal, but sometimes the superior to those taken by the pound nets. Such occasions have been rare.

It is to the great credit of the gillnet fishermen to testify to the wonderful strides they have made in the last six or seven years, in taking care of their catches, in order to insure delivery in the New York market, in prime condition. If the gillnet fishermen continue to advance in the future as they have in the past, the time is not far distant when their gillnet fish will compare favorably with other fish.

Fishermen of the North Shore should continually bear in mind, as do many fishermen at other points of production, furnishing the New York market, that our buyers of freshwater fish are the most critical of their kind in the world. With them it is not only good fish, it is absolutely fresh fish, as far as it is possible to secure it; it is part of their religion and where they cannot get what they think they ought to have, they will not make a purchase of fish but will turn to some other variety of food. It must be borne in mind that these people are consumers of immense quantities of fish all seasons of the year. Those of them who can afford Yellow Pike, Whitefish, or Blue Pike will gladly pay the highest prices, if the quality comes up to their expectations. Where they cannot afford the higher priced varieties, they cheerfully accept some other kind, the main point in their mind being that the quality is the best. As these people are increasing in population rapidly, there is a bright outlook for fish producers who can furnish the kind of fish they require and demand.

It is likely that there will never be any more so-called cheap fish, our population has been growing so fast that the demand has kept up with the production. Competition among dealers to secure what fish does reach the market, will regulate prices to the satisfaction of the fisherman.

The most essential thing in the production of gillnet fish of prime quality, is the taking of a sufficient quantity of ice out into the Lake, for the proper preservation of the fish up to the time that it is brought ashore for selection, packing and shipping to market. It is necessary, too, that when pulling the nets, ice be immediately thrown over the fish as soon as possible, or the fish are backed out of the nets.

Another thing that it is always well to bear in mind is, the sooner fish are on their way to the market after being caught, the better it is for the fisherman, the commission or wholesale dealer; for again we come back to "quality counting" in the way of rapid sales and ready money for the fisherman.

During warm weather, it should be the aim of the gillnet fisherman to fish a one night's catch only, otherwise the fish will not be in good condition. They may appear good when there are many delays in transportation, when fish shipped one day may not reach its destination for a week or more, it is a good thing to know that at that time of shipment, the fish were fresh from the water. Then if they do not reach the market in prime condition, it cannot be attributed to negligence or oversight on the part of the fisherman.

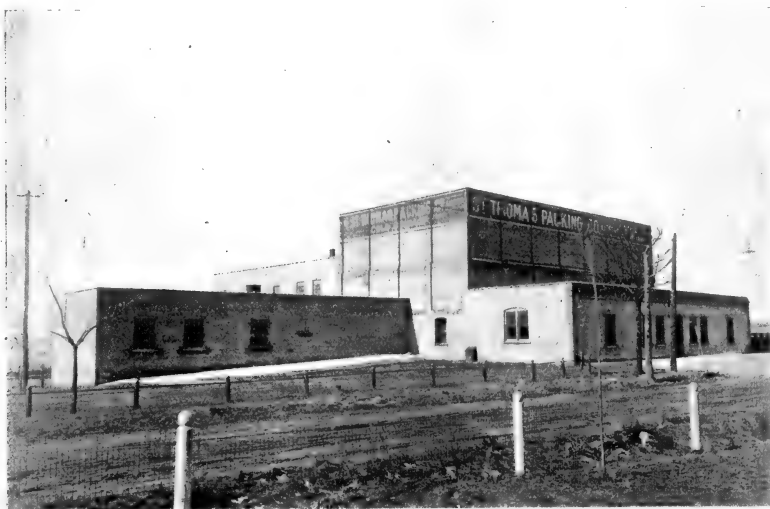
Eat fish and help win the war, we are told. The better the quality of the fish, the more of it will be eaten.

The St. Thomas Packing Co. Limited

The fishermen of Port Stanley are fortunate in having practically at their door a large and modern cold storage plant, which is fully equipped to handle large quantities of fish from the lake, located at St. Thomas, and known as the St. Thomas Packing Co., Ltd. This modern plant was established in 1906, and 1913 it was enlarged to over double its former size, and the cold storage end of the business added. It now has a capacity of 2,000,000 pounds, and 75 per cent of the plant is devoted entirely to fish. It is equipped with thirty 50-ton compressors of the Linde Canadian system of refrigeration, which operates under direct expansion. The plant itself is constructed of brick and compressed cork. It has its own ice-making plant, capacity of 15 tons a day. The company's private switches connect it direct with the Pere Marquette, New York

tion, employing about 20 men for five months of the year. In the last fishing season over 270 nets were in operation, employing over 270 men, operating for about nine months of the year.

Conditions have changed materially since 1884. In those years it was no trouble to catch fish, but the difficulty was to find a ready market for them. Now the reverse is the situation. It is no trouble to find a market for the fish, but the difficulty lies in securing them from the lake in paying quantities. The gasoline engine was an unknown feature in the early days. Row and sail-boats were used entirely, and the stake driving on the lake was all done by hand. These stakes were never pulled at the end of the season, as they are now, as new ones could be readily secured in any quantity for 25c. each; whereas, at the present time



Plant of St. Thomas Packing Co., Limited.

Central, Wabash, C.P.R., G.T.R., and London and Port Stanley Railways.

Mr. W. H. Moody, the manager of the plant, and the founder of the business, is a practical cold storage man of many years' experience, and is well known to the fishing industry, particularly on Lake Erie. The plant is specially equipped and adapted to handle Lake Erie fish, and, being located right in the heart of the district, insures the product being handled under the best of conditions.

The St. Thomas Packing Co., Ltd., also are distributors of fresh and salt-water fish.

W. D. Bates, of the firm of Bates Bros., Ridgeway, Ontario, gave a very interesting comparison of the way the pound net fishing industry has grown on Lake Erie from 1884 to 1917.

On 90 miles of the Lake, from Port Pellee to Port Stanley, in 1884, only 20 pound nets were in opera-

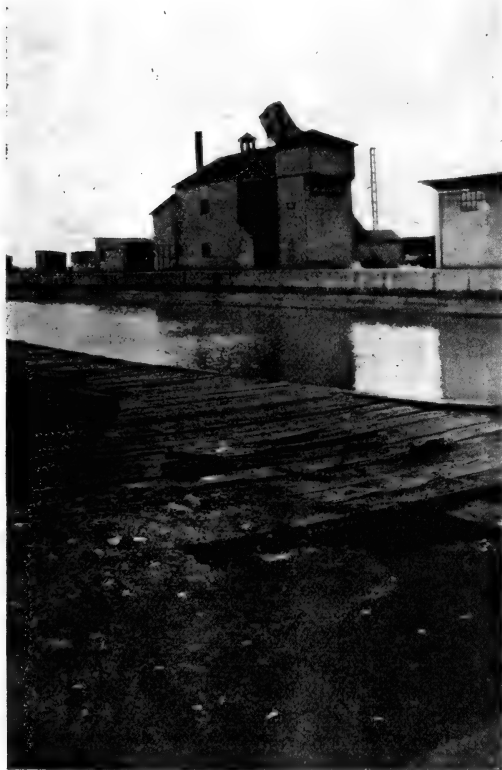
tion, from \$3.00 to \$5.00 each is the prevailing price. This is only one instance of the increased overhead cost in this industry. Marketing the product in the eighties was a very different proposition, with which the fisherman had to contend. No cold storage plants were in existence, and the fish were either sold fresh, or salted as soon as caught. Now the fishermen have up-to-date cold storage facilities whereby the surplus catch may be put in the packing house and left for an indefinite period. The market for the fish, in the old days, was confined principally to the nearby towns, such as Buffalo and Detroit. At the present time, the surplus catch, after the Canadian consumption has been supplied, is shipped as far west as St. Paul; Boston and New York in the east, and Cincinnati in the south. This shows the great changes that take place in a short interval in the fishing industry on this one section of this great lake.

The Utilization of Fish Waste

A New Industry for Port Stanley.

Port Stanley, on Lake Erie, has always been recognized as the most important fishing centre on that noted lake. It possibly produces over 50 per cent of the entire catch in that district.

Very few of our readers also are aware that this town is the home of the only fish fertilizer plant in Canada, and, as the utilization of fish waste, particularly at the present time, is one of the most important phases of the fishing industry, a description of this plant should prove of great interest to the whole industry.



Fertilizer Plant, Port Stanley Supply Co.,
Port Stanley, Ont.

In 1914 the fishermen of Port Stanley realized that something must be done in that section to clean up the lake, and got together, forming the Port Stanley Supply Co., Limited, with the object of putting in a fertilizer plant, the object being at that time to rid the lake of the offal, which was found in large quantities there. A modern fertilizer plant, at a cost of \$10,000, was installed, with a capacity of 16 tons per day. For several years the company have been producing

fertilizer and fish oil, the former finding a ready market in the vicinity of the plant among the farming industry, and the latter being shipped to different parts of the country. In 1917, 100 tons of fertilizer and 12,000 gallons of oil were produced in this plant. This year an addition is being made to the plant, and a new process of manufacture is to be started in the making of stock food, which is proving so popular on the American side, and which should find a ready sale throughout the country here, owing to its high protein value.

In the manufacture of fish meal the non-edible fish and fish offal are taken from the boat on to the dock, which is located right near the plant, and from there dumped into a receiving hopper located directly under the building. From there it is drawn through a 6" iron pipe by a vacuum pump into the evaporator. This makes a very complete sanitary method for conveying the raw material from the storage hopper into the evaporator.

The evaporator holds $4\frac{1}{2}$ tons of raw material per charge, and after same has been placed in the evaporator, the heat is applied for evaporating the moistures out of the raw material by jackets on the sides and bottom, and all the vapors and disagreeable gases coming from the raw material, during the time of evaporating and cooking are drawn out under vacuum and through a jet condenser, and the condensable gases are condensed and the non-condensable gases are conveyed underneath the boiler grates and consumed. This is the sanitary feature of the above apparatus.

As the raw material contains about 65 to 70% of moisture, a sufficient amount of moisture is already in the material which will assure a thorough cook, by the time the moisture is evaporated out down to 15 to 18% of moisture left in, the fibrous matter has been thoroughly cooked, and all the oil liberated from the oil cellules, which leave the oil in a very fine grade, and free from the usually strong odors coming from fish oils. This is due to the moistures and gases being drawn out under vacuum, likewise the fish meal having been dried under vacuum is of a very high percentage of protein, due to the moisture being drawn out under low temperature. This assures the retaining of all the nitrogen on which the value of fish meal is based, likewise all of the ingredients contained in the raw material are retained in the finished meal as no direct steam cooking is done whereby any of the glutenous matter would become diluted and drawn off in the usual stock water manner.

After the material has been evaporated, which usually takes about $4\frac{1}{2}$ hours, the same is taken from the evaporator and placed on an inclined floor and allowed to cool about 12 hours. The floor being inclined to trap such oils that might run off freely, and after same has been cooled it is placed into a hydraulic press and the oils pressed out, until there is about 14 to 16% of oil left in the fish meal. This is a very suitable percentage for feeding purposes.

After the meal has been taken from the press, same is run through a mill and put into a fine powdered condition. The value of this high grade of stock food has been recognized in the last two years, by the Pacific

Coast dairymen, where same has been fed as being one of the best butter fats and milk producing feeds to be had.

An analysis of this meal has shown that for chicken feed, and feed for hogs, cows, sheep and horses, the protein it contains is far ahead of other stock food. This will be seen by the following table:

Food.	Protein Av'gs. Per Cent.
Fresh-cut Bone	18
Fresh Meat	20
Flax-seed	21
Buckwheat Middlings	22
Gluten Meal	26
Dried Blood	52
Meat Scraps	59
Port Stanley High Grade Fish Meal	75

As a milk producing food for dairy cows fish meal is unexcelled. Two pounds of fish meal per ration per thousand pounds in live weight, will increase the milk production considerably. It also makes ideal

feed for a growing calf, the milk furnishing the necessary protein, and the skim milk the carbohydrates.

There is no question that a big future is ahead of this important by-product of the fishing industry, and the fishermen of Port Stanley are to be congratulated on their enterprise in being practically the pioneers in Canada along this line. The Managing Director of the company, W. H. McPherson, is a man who sees a big future ahead of this particular branch of the industry, and is meeting it by equipping the plant with all the up-to-date facilities to take care of the work.

In addition to this important by-product, the Port Stanley Supply Co., Limited, also handle a large amount of coal, which is used by the fishermen of the Port, and in 1917 6,000 tons were supplied by them to local interests there.

We have been informed by Mr. McPherson that the equipment in the plant was manufactured and installed by C. H. A. Wannewetsch & Co., of Buffalo, N.Y., who operate a similar plant of six times the capacity on Puget Sound, in which they utilize the waste from the salmon canneries.



A group of Lake Erie Fishermen and their guests, taken during the Annual Meeting of the Lake Erie Fishermen's Association, St. Thomas, February, 1918.

during the Annual Meeting of the Lake Erie Fishermen's

Pound Net Fishing in Lake Erie Between Point Pelee and Rondeau

An address delivered at the Annual Meeting of the Lake Erie Fisheries Association, St. Thomas Ont., 1918.

By A. E. CREWE.

This subject, Pound Net Fishing between Points Pelee and Rondeau, is one that it is impossible for me to do justice, a whole volume could be written on its past, present and its future prospects. It is well known that Lake Erie is the finest body of fresh water in the world for rapid fish propagation, due no doubt to its shallow nature and so little barren wastes, as we would call the deep waters of the other great lakes. As a choice location, this cannot be improved on, the Points jutting out in such a manner as to keep the endless lines of freighters many miles off shore with their pollutions constantly going into the waters. The lake bottom is composed of sand and clay throughout with a fine slope outward for leading fish properly into the traps, and stakes driven

herring for a few cents a bushel. A large potash kettle was set up at the shore for rendering out the oil, principally from the sturgeon. A few more nets were gradually added, the principal market being the south shore, mostly Sandusky, the long hazardous trip of the loaded fishing boats being made mainly during the night, the fishermen having little idea of how long the trip would last, if they would get to market before the cargo spoilt, or if it would be disposed of if landed fresh. Wagon loads of the better kinds were hauled to Detroit, a distance of some fifty miles, and over very different roads from what the tourist enjoys now. During this period much whitefish, to save it for the markets, was dressed and heavily salted before being offered. Of the pioneer



Sorting and Cleaning Fish on Lake Erie.

into this lake bed to a depth of five or six feet withstand well the heavy storms throughout the season. The early settlers at certain seasons could from the beach with a gaff, secure all the sturgeon they could make use of, but our first record of nets was about 1855 when Jacob Julian, an enterprising settler on a farm where the flourishing village of Wheatley now stands, operated a draw seine. Plenty of whitefish could be secured in this way, and they were about all that any market could be found for, and that very limited, the balance being thrown away or rendered for the oil.

In 1866 Wm. McLean secured a Pound Net from the south shore, where they were freely used and set it off the Two Creeks. It would catch more fish than could be marketed. Sturgeon were peddled far and near over the country at twenty-five cents each, and

families in this work namely, McLean, Moody, Bickford, Lamarsh, Loop, Shaw and others. McLean is about the only one represented in the present fisheries. Enoch, a son of the pioneer, still operates a very prosperous fishery. The Post Fish Co. was finally formed in Sandusky to exploit the north shore, making season's contracts with the owners, and sending small steamers for their catch. They also secured holdings and operated many fisheries on a share basis. This has been discontinued by them but a very few years, and the Post Fish Co. is still a very reliable concern, but confines its fishing to American waters.

When it was realized that Pound Nets would be the ideal way to fish these waters, the Canadian Government brought in legislation dividing the fisheries into limits, fronting ten lots on the shore, each oper-

ator was confined strictly to his limit, and was protected on it. At first the fee was ten dollars per net, but was gradually advanced to fifty, making a very substantial revenue at the present time. There is much to applaud in this far-seeing action, for it assured the fishermen that if he paid his license promptly and obeyed the fish laws he would be protected in his holdings and could plan accordingly. I am assured that as late as 1888 there were still only thirteen pound nets fishing in this district, but shortly after the Fisheries took a boom, two of the principal factors of which were, the building of what is now the Pere Marquette Railway paralleling the shore in 1892, and the Buffalo Fish Co. building extensive freezers and storage at Two Creeks. The fishing limits were all soon taken up, this freezer being quickly filled with herring each year, and car loads weekly shipped via the railroad. So many herring were taken for this few years that large quantities had to be turned loose, the markets absolutely refusing to handle them all. Sorry to say, the freezer venture at Two Creeks proved a failure, and the outfit that cost some twenty thousand dollars was sold for two hundred.

eries, with a tramway up the bank to suitable buildings for taking care of the twines and fish. This programme has since been carried out on all fisheries so located to a much more pleasing and satisfactory extent than at first conceived. In 1904 there was not one fishery in the whole district not under contract to some dealer for the whole catch during the season, the success of the fishery depending on this contract, but in 1905 and 1906 more prosperous times commenced, the telephone arrived to the fisherman by way of party lines. As soon as the catch was landed he got in touch with his markets and their agents, contracts were tabooed, and we realized at the end of the season our receipts were doubled. Simultaneous with the telephone came the gasoline motor. This made way more slowly, and really the first makes were cranky, balky affairs, and to make matters worse, the operators needed experience, but for all the landsman gives the fisherman credit for being willing to take long chances in his business, few wished to be placed at the mercy of only a motor in their boat in its early stages. But with the advent of the telephone and the motor came stability for the industry. With increased prices came the advantage of fishing actively



Fish House and Twine House of Crewe Bros., Merlin, Ont.

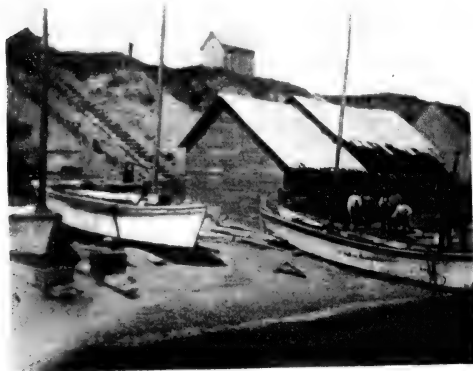
Before 1900 the fisheries were found to be failing fast, the whitefish and herring catches got very light, the sturgeon that for a few years had been slaughtered for their caviar and oil, were practically gone from the whole lake forever, the prices were still very low. It was all in the interests of the dealers to keep their contract prices down, and all together the industry got to a low ebb, many of the operators went out of the business feeling that its palmy days were over, little dreaming they were not yet commenced.

The business was brightening somewhat when in 1904 the writer entered actively into it. By this time the fisheries had been split up from their original limits by purchase with the consent of the Fisheries Department, into much smaller limits, where the banks were low and plenty of beach on which to land the boats, leaving the limits of the high banks of eastern Romney, Tilbury, and Raleigh Townships their original size, and very little fished. We realized these difficulties could be overcome by building substantial docks, and boat hoists at suitable points on the fish-

the season through in place of laying up while the water was warm as formerly. Two sets of twine were provided to make this possible, and now the nets are scarcely off the stakes over night. The motor makes this work possible, moving direct and quickly where necessary. For all of the enormous increase in nets, there being now in this district about one hundred and forty, there are more of the better kinds of fish than fifteen years ago, namely, whitefish and herring. This must be credited to the hatcheries, which for several years have been placing millions of young fish in the lake each year. More interest is being taken to secure all spawn possible by the fishermen for this purpose, for they now realize the unlimited good that can be done to their business in this way.

A comparison of changes from 1904 to the present may be of interest even to many actively engaged in the industry during the whole of this time. As soon as danger of ice is past the scows are put to work driving the long slender stakes, many of them up to

sixty-five feet in length, as there is no protection along nearly all of this district, these must be built very strong and as light as possible, for each night they must be pulled from the water to a safe place on the beach. About the most serviceable size is found to be thirty-three by fourteen feet. In 1904 all stakes were driven by hand, a one hundred and fifty pound iron hammer being worked in the guides with ropes



Crewe Bros. Fishery in 1904, showing the sail boats, fish house, ice house, and living house attached, the tramway up the high bank, also the horse stable at the top, the only building above the beach at that time.

by eight or ten men, the scow was towed with horses or men along the shore to opposite the work, then propelled with oars to the work. If a current was on, a dinghy would run anchors ahead for the men to haul on and in case of storms this had always to be done to return. Setting in the stakes was a slow and very laborious job in those days to now, when we have a stationary gasoline engine to do the heavy work, a much heavier hammer is used, a propeller connected at will, while spools are attached to the

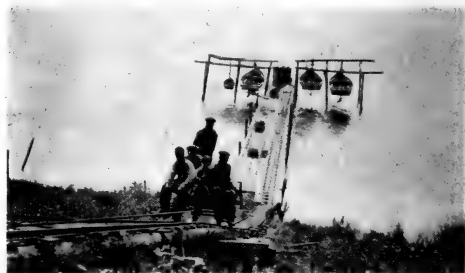


Crewe Bros. Fishery's dock, showing how the boats are cared for and the scow going away under her own power.

machinery for doing the heavy work and quickly landing the scow on shore. Where the sail boat had to be left ashore while at this work, the motor boat, the standard size of which is thirty feet long with nine feet beam, flat or half round bottom and open save for an ingenious little take down house over the engine, strongly built and very sea-worthy, now is a tender for the scow. Where the stakes had to be load-

ed on the scow to get them to the driving ground, the boat now quickly tows them, the same difference applies in getting them ashore when the season is over. There is really no difference in the shape or make-up of the Pound Net from the early days, but the setting of it has been much improved—from the time it is ready for the tar vat to the appliances holding it in place on the stakes. Pound nets are now set in lenial order of from five to seven, commencing near shore in about fifteen feet of water and running out to a depth of around fifty feet, averaging about five feet of depth to each net, and these strings are only from one to two miles apart along the whole district, employing a large number of men, as each string has to be cared for by at least one boat, and five or six men, with extra men at certain seasons. Last year the catch of this forty-five miles of shore fisheries was nearly four million pounds.

In 1904 twine cost us less than thirty cents per pound, it is now seventy-five cents, Manilla rope eleven to twelve cents, it is now thirty-five to thirty-six. Poles were dear at one dollar each, they are cheap now at five dollars each. The best experienced fisherman could be secured at forty dollars per month, they are now getting from seventy-five to one hundred dollars



Crewe Bros. Fishery dock, showing the boats in their hoists with a loaded car being drawn up the bill by a natural gas engine in the fish house at the top.

per month, and other necessary expenses in the same ratio, from the operators' viewpoint, much faster than the prices of fish have advanced, but altogether, the outlook is good for the fisheries here, outside of possible interference by the Government of price fixing, if this is done even to a limited extent, it behoves the fishermen with so much to contend with to be very conservative, and if he is it must curtail much advertised and necessary increase of production.

The success of the fisheries located as they are, short distances apart, means much to the prosperity of the surrounding country and as well to the whole Province.

Some 35,000 tons of fishery salt from the Mediterranean is required by the Atlantic coast fishermen this season. The Canada Food Board has communicated with the British authorities to allocate the necessary tonnage for the transport of salt — the first cargo to be delivered in Halifax early in March. Just what the prospects are for delivery is indefinite, but hopes are entertained that it will be satisfactorily arranged. A salt famine would have disastrous consequences.

How the Hatcheries have Benefited the Commercial Fishing

Interview with Messrs. A. Hoover & Son.

In 1880 when my father started fishing with two pound nets in Lake Superior, off the County of Haldimand, he found fish of all kinds to be in abundance; shortly afterwards the gill nets and pound nets be-



A. HOOVER, of Nanticoke, Ont.,
and a fair specimen of Lake Erie fish.

came thicker and thicker, and as there were no means at that time of restocking the lake artificially the fish became scarcer, and particularly during the years from 1900 to 1907, the herring seemed to be almost gone in this locality. We depended solely on blues, whitefish and sturgeon, but the whitefish were getting scarcer when all of a sudden in 1908 the herring came again and the whitefish began to increase, and in 1909 we had the largest catch of whitefish we ever had. Our catch of whitefish was good ever since until last fall when weather conditions were very bad, but the herring last year were more abundant than ever.



Plant of Hoover & Son, Nanticoke, Ont.

At just what date the States of Pennsylvania and Ohio began putting whitefish and herring fry back in the lake I do not know exactly, but by our increased catches they must have been well under way by 1909. Now at the present we have two hatcheries on the Canadian side of Lake Erie, and with the co-operation of the American hatcheries we should have abundance of fish in Lake Erie for all time to come if the fishermen co-operate in helping the Department to secure all eggs possible to keep the hatcheries full to capacity.

Some Live Questions for Fishermen, National and International

In the evening of the first day of the Lake Erie Fishermen's Association Convention, Prof. Edward E. Prince, Dominion Commissioner of Fisheries, Ottawa, gave an illustrated talk, as follows:—

The war has aroused Canadians to appreciate the value and importance of the Dominion's Natural Resources, none more so than our fisheries. Vast numbers of our people now take an interest in fish and fishery matters, who never gave them a thought before. Our fishermen, even though they number close on to one hundred thousand, must have often felt that they were a forgotten and neglected part of the community. May not this inattention be a good sign; a sign that all is well. Emphatically, no!

Some Aspects of the Fish Supply.

From Atlantic to Pacific the people complain of an insufficient supply of fish, of its frequent poor quality or condition, and of the high prices, which tends to go still higher. Moreover, some fishing grounds are de-

pleted, and catches of kinds are made constantly which are not marketable, but involve time and labor handling, most of it a loss to the fishermen. Such wasted fish said Dr. Barton Evermann (referring to the Pacific halibut fishery), "is enormous in the aggregate, in weight it is probably at least one-half of the halibut catch itself." Of course, if the truth be told, there is almost no species which is worthless, and there should be no waste by throwing fish back into the water, or piling them up on shore to rot. It ought to be possible to turn every fish caught to account were the industry properly encouraged, and conducted rationally and wisely. By-products, as science has shown, are often more valuable than the original staple product, as the varied commodities made from coal-tar and sawdust waste by chemical methods have demonstrated. Fish-roses, for example, are usually not turned to account, though a food of the highest value, and Siberia exports annually over 250 tons of salted salmon-roses, worth several million dollars, and marketed as a kind of caviare. In the Pacific salmon

industry from one-third to one-fifth of the total weight of fish handled is waste, yet it could yield most valuable materials. Australia not long ago regarded rabbits as a curse and spent millions of dollars in efforts to clean them out, but their food value is now appreciated, and as much as \$3,000,000 to \$4,000,000 per annum is paid to rabbit catchers, about \$200,000 for boxes and crates, and over \$500,000 a year for freight by steamer to London, nearly a million crates being shipped there annually.

The People Must Have Cheap Fish.

The public feel that they ought to have cheap fish. Is the fisherman to blame for the prices now prevailing? I declare that he is not. I was told when addressing a meeting of ladies in Ottawa recently, that the fisherman demanded double his former price, or more than double. No one grudges the fishermen a few more cents per pound; but for every such 4c or 5c increase there should not be 10c or 12c increase to the consumer. I have seen regularly the lists of prices paid at the boat to the fishermen, and the retail prices have been increased inordinately in my opinion. The highest prices to the fishermen, have, indeed, been paid on the Pacific coast, where the main mass of men are really alien by birth, not real Canadians at all, but Austrians, Greeks, Japanese, and even Germans. Premier Matheson said in Ottawa that a few years ago he had to pay in Charlottetown, P.E. Island, 8c per pound for cod which the fishermen sold on the shore not many miles away for 1½c per pound. Such conditions are unfair to the consuming public. The fisherman in the long run suffers. It is therefore for the fishermen to see that fair retail prices are charged, and that no means are resorted to, by any class in the business, to curtail the supply in order to inflate prices. Did time allow, I could give facts and dates to prove inflation and curtailment of supply. There is no real shortage. Last week two schooners landed in Boston 20,000 lbs. of fish, mainly haddock, and got \$10.50 per 100 lbs., but in the retail stores close by, they were sold to the public at 23c per pound. The catches, of course, vary, but there is no real shortage, and a good supply and a good demand should imply cheap fish.

Improved and Speedier Methods of Handling Fish.

More rapid and efficacious methods of handling the fishermen's catches are imperative. Delay in placing the fish after capture in cool conditions means deterioration. Fish in poor condition in the market should be unknown in Canada, yet a well-known authority said in my hearing in Ottawa the other day, "I dread to eat fish, because its condition is so uncertain—it is so rarely perfectly fresh and sweet. I want to have fish as often as possible, but I am nearly always ill after a meal of fish." He was a man who knew what he was talking about, being a scientist, a bacteriologist, and somewhat of a food expert. Poor fish in our large Ontario cities is indefensible: there is no excuse for it. Excellent whole-some fish should be universally obtainable. Mere distance is no difficulty. I tasted some whitefish lately, which had been shipped 1,800 miles, and nothing could have been sweeter or better: while some cod placed on my table a week or two ago, shipped 750 miles, was the firmest and most appetising cod which I have ever tasted. Some steelhead salmon sent on ice from Victoria, B.C., reached me in Ottawa in perfect condition. All depends upon proper handling after catching. Our fishermen should never rest until there

is a system, in operation, such that their fish can be placed under chilled conditions immediately, before any great deterioration can take place, followed by rapid shipping, and their delivery to customers, in retail stores, almost in as good condition as when taken from the nets. Modes of handling and transportation are not up to date if fish are in poor condition, or bad condition, when offered to the consumer in our large cities. If a fisherman is careless, bruises his fish, and handles them roughly, and without care, the harm is done at the outset. If exposed to the blazing sun, the bacteria of decay get their best chance, if blood cakes upon them after gutting, if knocked about and trampled on, and especially if they are delayed in being brought into cold store-rooms, no care or rapid transit can make good fish of them. Maltreated on the boat, or on the fish-wharf, allowed to become tainted at the start, and the fish are ruined for food purposes. There cannot be too great speed in getting the catches from the nets into cool conditions, on shore, and placing thereafter in cooled fish cars. Similar cool conditions must be maintained at their destination, when in the hands of the wholesaler and retailer. Apples, and other fruit, do not demand more care than fish, yet no one would bruise or parch or crush such fruit in transit from the orchard to the final retail store.

The fruit trade has secured care in handling, perfectly cool storage, and rapid transit, thus ensuring good condition of fruit when finally sold to the consumer, and these conditions are no less essential to the handling of fish. "Oh, its only some boxes of fish, throw them down there, till we get through with these sacks of potatoes." That is the kind of thing one hears occasionally at the depots. I know how much improvement has taken place in recent years, thanks to influence and efforts of the Canadian Fisheries' Association; but much remains to be done, I took part in the steps for improving fish transportation nearly thirty years ago from Grimsby, Hull, and other great English ports, and I know what can be accomplished if fishermen and fish traders are in earnest. Britain has the most efficient and cheap fish transportation in the world, and some fish travel 800 miles, yet it would be rare to find fish in retail stores that had not the condition and wholesomeness of the freshly caught article—a state of things due in no small measure to the various Fishery Associations, helped largely by my good friend, the late Lord Tweedmouth, well-known as Mr. Edward Majoribanks, who did such herculean work for the British fisheries. The Georgian Bay Fishery Commission, of which I was chairman, suggested cold storage houses at central points on all the Great Lakes, under Government auspices, for receiving the catches from the fishermen, to ensure freshness and avoidance of decay; but the details are easy to work out for widespread system of fish-transportation and cold-storage.

Popularize Fish Food, Especially Frozen Fish.

Increasing the Canadian demand for fish is of first importance to the fishermen. Advertising fish products, and stimulating increased sales are necessary, and a vast amount has been done by the Fisheries' Association, the Food Controller's Department, etc., as well as by the Fisheries' Departments, in Ottawa and Toronto, so that I need do little more than call attention to the matter. Fish have become more popular, and the consumption has recently trebled; but

after all, under the strained conditions of living during the war, the best advertisement is cheapness. If the price be low and the supply plentiful, the fish trade will expand beyond our imagination, but no amount of advertising will maintain a great demand if the fish are not always in prime condition, and if they are high-priced. The feeling is widespread that fish are not as low-priced as they should be.

The use of frozen fish should be immensely increased. Many people still regard frozen fish as inferior. The prejudice, which is really an English one, must be removed. In England the people are beginning to realize that frozen fish are just as good food as fresh fish. As Mr. Hanna declared in a recent Food Controller's Circular: "In the past, poor methods of handling, careless refrigeration, and the mis-use of cold storage, have been responsible for the antipathy against frozen fish. The housewife through ignorance of the proper manner in thawing and cooking chilled fish, has been at fault." He was well justified in declaring that, "If the people of Canada would make more use of frozen fish, prices and supply would be more regular, and the whole fishing industry would be revolutionized. Frozen fish, chilled soon after leaving the water . . . is just as good eating as any fish that ever came out of the seas or lakes."

In regard to our fisheries and our demand for fish, there is no reason why we should import any fish whatever. Canada's imports of fish and fish products was \$2,476,279 in 1916-17. In my opinion our export of fish is of less moment to us as a nation than expanding our domestic demand. We ought to be self-supporting. The time has come for it. "Canada first," should be the fisherman's motto, and the merchant's as well. There is no need to scour the earth to find outside markets. Once Canada was a poor market, but as Mr. H. B. Short, of Digby, a leading Maritime Province fish-merchant, told the International Commission, the other day at St. John, the best market is here in Canada. The impression is an erroneous one that our best market is across the line. Those engaged in our fisheries who have done best are the Maritime Province firms who shipped fish to the Mediterranean, and Europe generally, and the West Indian and more southerly markets; or the Pacific firms whose market was in England or France. No one can estimate the vast business losses of those who have cultivated fish business only with the States immediately to the south. It is a sad story and too well known to need any further reference here.

Fishery Conservation is Imperative.

If fish become scarce the body of fishermen are the first to suffer. Plenty of fish implies prosperity. What a calamity it is to destroy a permanent resource to make dollars quickly. I visit at times a Maritime Province town, which fifty or sixty years ago was busy and prosperous. Great forests were close by. Lumber mills, busy wharves, fleets of large vessels, fine stores, enterprising businesses, all characterized the place; but in a few years the timber was cut, nothing but bogs and rocky wastes were left, and the town became a dead town. The streets were completely deserted as I saw when I was there a month ago. The stores are closed, even the hotels have all shut down, and the men who made money have gone to live in California or the southern states. There was no conservation, only exploitation and devastation and, in the end, death. Such disaster follows the destruction of any valuable

natural resource. We must conserve our fisheries, and how can we do it. Plenty of fish can be secured for our use, but there should be no waste. Over-fishing must be guarded against, destruction of small immature fish avoided, spawning fish protected, pollutions prohibited, and other measures adopted which we call 'Fishery Regulation.' Some fishermen there are who favor no regulation. Free, unrestricted fishing is their motto. That was precisely the cry ten years ago in Puget Sound, and now when the Fraser River salmon schools have been exterminated these same Washington State cannery and trap-men call loudly for closure of fishing over a period of years. They can now operate only at a loss, and the fishermen who relied upon sockeye netting operations each summer face a serious crisis. I remember years ago urging free fishing upon a meeting of Lake Erie fishermen, in order to put them on an equality with U. S. fishermen, who had no restrictions practically; but there was a loud reply, No! No! Now, fishermen generally realize that fish should have protection, and the fisheries be conserved. Some regard hatcheries as a sufficient safeguard. I shall refer to this in a few moments. Of course, in the Great Lakes and all places where we share the fisheries with our U. S. friends, uniform regulations on both sides alone can be fully effective. My U. S. colleague, Dr. Starr Jordan, and I did our best, under the Fishery Treaty, of April, 1908, to start a system of uniform fishery regulation, and the fishermen on both sides of the international boundary would have benefited by the results. We must have co-operation in this vital matter; but I am no believer in conceding everything to our American friends, merely for the empty satisfaction of boasting that international agreement has been accomplished. Many of you may remember the "Palmer Bill," prepared by the lake fishermen of Ohio for the protection of themselves and the fish, and discussed years ago at Columbus. It included many wise provisions, some establishing a close season in winter, and a prohibition of taking under-sized fish, and so on, clear evidence of the foresight and wisdom of the fishermen when not under the influence of selfish and shortsighted "fish trusts" and "combines." There need be no fear of the future of our fisheries in the boundary waters, if the United States and Canada can join in a common policy of fish conservation.

The Place of Hatcheries in Fisheries' Development.

Fishery conservation involves, as I have said, regulation; but what about fish hatching? Fish culture is a great aid, even though some critics may doubt it. I have always maintained, and publicly asserted on numberless occasions, that hatcheries are not a substitute for preservative regulations. Critics unkindly refer to the vast increase of fish, not hatched in our hatching establishments. How is it, they also say, that sea-salmon were once numerous in Lake Ontario, but declined as soon as salmon hatching began in Ontario, and are now extinct in spite of stocking. Where is the increase in lobsters in spite of the hatching and planting of hundreds of millions, year after year, along the Atlantic coast. Fish culture is an aid, a help, not a substitute for conservation, I have consistently maintained. Close seasons are necessary for two reasons: 1st., spawning fish swollen with spawn are not suitable for food, and their capture should be prevented by law. 2nd., Unless parent fish are saved from extermination, hatcheries cannot get supplies of spawn. Hatcheries have many times had to close down because

of lack of spawn. Parent fish could not be procured, being apparently practically depleted. When the supply of fish depended upon nature alone, there was abundance of fish, indeed, the early settlers on this continent found fish plentiful everywhere. Man's unrestricted inroads have diminished the total supply, and many persons talk glibly about restoring waters by planting fry as though it were a very easy, simple matter. For successful fish culture special knowledge and training are needful, and great harm has been done by the claim that hatcheries alone will restore depleted fishing grounds, and keep up great fishing industries. I observe that some of those supposed authorities who for long made that claim, are now coolly adopting my view, and emphasizing the necessity of protecting parent fish at the spawning time. You cannot disturb the balance of nature by removing vast quantities of the breeding fish of valuable kinds, and restore the balance by a single remedy. Other fish have got ahead, and been replacing the declining schools. These usurping kinds are, as a rule inferior, and often worthless species. Like a garden from which the valued

vegetables have been taken, weeds soon thickly occupy the depleted areas.

Vast fishing operations, year after year, on both sides of a lake like Lake Erie, must tell on the supplies of the most esteemed fish. The balance of Nature is disturbed, and Nature's arrangements are too complex to admit of one remedy putting all right again. Many remedies must be brought to bear.

Let us be wise. Let us not be blind to facts. Let increased production go hand in hand with utilization of wasted fish products, let wise conservation accompany artificial aids in restoration, above all let science give all the help she can to the fisheries. The farmer, the miner, and other exploiters of our Dominion's resources, have sought the aid of science, and it has been of infinite benefit. The biologist can help the fisherman, and can give guidance in developing, without ruining, our harvest of the waters. Let us not impoverish and destroy our fisheries merely to meet a temporary need, or reap pecuniary benefit out of abnormal food conditions, national and international, but fully utilize them under wise conditions, and all will be well for the future.

"Fish Culture in Canada"

Paper read by Mr. J. A. Rodd, Dominion Superintendent of Hatcheries at Lake Erie Fishermen's Association.

After such an interesting and instructive lecture I hope you will not find what I have to tell you regarding the Dominion Fish Cultural Service too uninteresting.

Inception.

Fish Culture as a Dominion Government Service had its inception in 1867 when the Department of Marine and Fisheries assisted the late Samuel Wilmot in Fish Cultural operations previously conducted by him at Wilmot's Creek, near Newcastle, Ont., as a private enterprise.

First North American Fish Culturist.

From all the reports that I have been able to find, the first successful hatcher of artificial impregnated fish eggs was Mr. Theodotus Garlick, of Cleveland, Ohio. I mention Mr. Garlick in connection with Canadian Fish Culture, as according to a paper read by him before the Cleveland Academy of Natural Science in February, 1854, (Fisheries of Quebec by E. T. D. Chambers) some of the first eggs with which he experimented were obtained by him in 1853 at Port Stanley, Ont. These were the eggs of the speckled or brook trout.

First Canadian Fish Culturist.

The first Canadian Fish Culturist was the late Richard Nettle, of Quebec and Ottawa, who died in Ottawa in 1905. He was appointed Superintendent of Fisheries for Lower Canada in 1857, and that year in answer to a written application therefor, (The Fisheries of the Province of Quebec, by Chambers) he was given permission to resort to artificial propagation as a means of restoring the salmon fisheries to their former value. His plant was naturally not large, and his official report for 1857 states that "the spawn boxes

would contain about 8,000 ova (portable boxes might be made to contain about 6,000 more within the tank or pond), and the large pond will contain about 10,000 young fish." The eggs were hatched on gravel in wooden boxes lined with lead or zinc. His first experiments were with trout eggs obtained in the Jacques Cartier River, and Lake Beauport, and the resulting fry were reared and fed on hard boiled liver (pulverized), and small worms from the tan pits, until the fall of 1858 when "some of them were from 3½" to 4" in length, and almost as broad as they were long." (Fisheries of the Province of Quebec, by Chambers.)

In 1858 the Ovarium was stocked with salmon eggs (from 7,000 to 8,000) from two pairs of salmon taken in the Jacques Cartier River, which seems to have been his principal source of supply. He states, (Fisheries of Quebec, by Chambers) that his success was all that could be hoped for, and at least 70 per cent of the eggs became young fish. Mr. Nettle must have been an enthusiast, as he performed the Cæsarian operation on some salmon eggs, the shells of which had hardened, "by piercing the outer shell with a sharp pointed needle taking care not to puncture any vital spot." Under present conditions when fry are hatched by hundreds of millions this would be a rather tedious undertaking. In 1859 when collecting salmon eggs in the Jacques Cartier River, he caught and opened a trout that was following the salmon and feeding on their eggs. The trout was opened and the eggs (300 to 400) were carefully turned into a tub containing salmon milt. A large portion of the eggs were injured and were removed, and the remainder were placed in a separate box in the ovarium, and in due course hatched and the fry were placed in the St. Charles River. Mr. Nettle's operations were continued into the early 'sixties.

First Fish Cultural Operations Under the Dominion Government.

Fish Cultural operations as a Dominion Government service is as old as Confederation, as in that year—1867—the Department of Marine and Fisheries assisted the late Samuel Wilmot in collecting and hatching the eggs of the salmon of Lake Ontario, which at one time resorted to the streams flowing into Lake Ontario in countless numbers, but were at that time (1867) owing to destructive methods of fishing, rapidly disappearing.

According to his report for 1868, Mr. Wilmot commenced hatching of Lake Ontario salmon eggs taken in Wilmot's Creek in spring water in his cellar at Newcastle, Ont., in 1865. In 1866 this creek, at Wilmot's request, was set apart for the natural and artificial breeding of fish and that year he secured about 15,000 eggs. The next year he was given some Government assistance and secured a larger number of eggs than in 1866, but had a larger percentage of loss. In 1868 he was appointed a Fishery Officer with instructions to apply himself more particularly to Fish Culture, and the Newcastle Hatchery was built by the Dominion Government.

According to all the reports that I have been able to find, this was the first hatchery on the Western hemisphere built by any Government.

U. S. Activities.

A very active interest was taken in Fish Culture about this time. Several of the States were looking into its possibilities, and some of their officials visited the Newcastle hatchery, and examined the apparatus used and the methods followed there. It was not, however, until 1871 that the U. S. Congress took the initial step towards a National Fishery Service by creating the office of Commissioner of Fish and Fisheries and the propagation of fish (Dr. Hugh M. Smith's paper read at the Fourth International Fishery Congress, 1908) was undertaken by the Commission in 1872, at the instigation of the American Fish Cultural Association, which was organized two years previously.

Some of the States had propagated fish previous to 1872, but Canada led the United States by four years in Fish Culture as a Federal Government Service, and Mr. Nettle's operations in Lower Canada appear to have preceded State-aided operations in any of the States by several years, as Mr. Livingston Stone is authority for the statement that Seth Green was the Father of American Fish Culture, and it is a matter of record that he was the first successful hatcher of shad eggs, which feat he accomplished for the first time in 1867.

Private Hatcheries.

In the early days of Fish Culture, fertilized eggs and young fish brought good prices, and several private hatcheries were started. In 1871 33,000 salmon eggs from the Newcastle hatchery were sold to the Fisheries Commission of Connecticut, and others, at the rate of \$40.00 a thousand. Such prices induced private persons to go into the production of fertilized eggs and young fish as a business.

In 1866 Mr. Fletcher, of New Hampshire, collected salmon eggs in the Miramichi River, N.B., for stocking the Merrimac River, New Hampshire. His method of taking the parent fish—spearing them on the spawning beds—was most destructive, and his operations were not continued after the first year. A hatchery was also erected in 1866 at North Esk, on the N. W.

Miramichi by the Rev. Livingston Stone, of Boston, and Mr. John Goodfellow, of North Esk, on the understanding that half of the fish produced would be turned alive into the river, and the balance would be their property. Their operations were little more satisfactory than Mr. Fletcher's and were soon discontinued.

A private salmon hatchery was erected by the late John Holiday on the Moise River, Que., in 1869, and was continued by the Holiday family as long as it held the fishing rights in the estuary. Their hatchery was operated for over sixty years, and was discontinued in 1912.

David Brown and others operated a trout hatchery at Galt, Ont., and in 1870 had as many as 10,000 parent trout in the main pond, besides fry and fingerlings. This early boom, like all other booms, notably the black fox boom, came to an end although two or three fish farms still operate in Ontario, and there are quite a considerable number in the different States.

Early Expansion.

Mr. Wilmot was not only enthusiastic but was most ingenious, and with the skill and enterprise which was characteristic of him, he rapidly extended his experiments to the hatching of the other food fishes of the eastern rivers and lakes; namely, the Atlantic salmon, salmon trout, whitefish, and pickerel. He was at least one of the first, and he claims to have been the first (Official Report, 1875) to have successfully hatched whitefish eggs in 1867-68. Salmon trout eggs were collected in 1869 and were successfully hatched in 1871-72. Bass were hatched in ponds at Newcastle in 1872, speckled or sea-trout in 1876-77, pickerel in 1881, Pacific salmon in 1884, and lobster in 1891.

In 1876 there were seven hatcheries in active operation, with a year output of over 9,500,000 fry, and Mr. Wilmot was appointed Superintendent of Fish Culture, and was the first to hold that position, which he held until 1895 when there were 15 hatcheries in operation with an output of 254,000,000 fry.

Early Apparatus.

As is usual with all new ventures or undertakings, the apparatus used and methods followed by the pioneers are changed as greater experience is gained. This rule has held good with fish culture as it has with other undertakings.

In his earliest experiments Mr. Wilmot endeavored to follow nature as closely as possible in taking and fertilizing the eggs, and I have been told by one of his assistants, the late Mr. Walker, that one of their methods was to strip the fish under water. The wet method of fertilization was followed and the eggs of the female were stripped into a pan of water, to which the milt was afterwards added. After following this method for several years, in 1870 Mr. Wilmot endeavored to get still closer to nature and arranged in the creek a spawning bed of gravel, where he hoped that the fish would spawn and the eggs be fertilized in the natural way. The spawning bed was made of gravel placed on a grating, and it was hoped that in the work of spawning the gravel would be more or less displaced, and the fertilized eggs would drop through the gravel and the grating on to a canvas on rollers, from which by turning a crank the eggs could be deposited in a pan or trough as desired. This plan appears to have been followed for only one season. The eggs of both salmon and whitefish were carried,

during the hatching season, on grills made of double rows of glass rods in a small wooden frame sufficiently close together for the eggs to rest on the rods without falling through. For the heavier eggs of the trouts and salmon, trays made with a wooden frame and bottom of wire screen soon replaced the glass grills, and the aforementioned trays were subsequently replaced by the trays—made out of one piece of perforated tin or zinc,—and the wire trays and baskets that are now used.

For the whitefish and other semi-buoyant eggs, the glass grills were replaced by an invention of Mr. Wilmot's which in 1876 he patented in Canada and the United States and called "a combined fish egg incubator and self picker of eggs." As first patented the eggs were retained in tin or metal receptacles, but in 1881 these receptacles were replaced in the Sandwich Hatchery by glass jars, which in various forms are now in general use everywhere for hatching semi-buoyant eggs.

In 1883 a complete working section of the system of hatching in Canada at the time was put in operation at the Great International Fisheries Exhibition in London, where it carried off the highest award, namely, the Gold Medal and Diploma for the best and most complete fish breeding establishment in the Exhibition.

As was previously stated, during his earlier experiments, Mr. Wilmot endeavored to follow nature as closely as possible, and placed the eggs of the fish as they were stripped in as large a body of pure water as could be conveniently arranged, and afterwards added the milt of the male fish. In later experiments he found that by using a smaller quantity of water with the eggs a large number were fertilized, and in 1871 he dispensed with the water almost entirely and followed what is known as the dry method of fertilization, which has been since followed, and about that time was adopted by most, if not all, fish culturists.

As above stated, there were seven hatcheries in operation when the first Superintendent of Fish Culture was appointed in 1876. The following statement shows the expansion of the Service since then.

Year.	No. of Hatcheries Distributing fry.	Distribution
1876	7	9,655,000
1886	12	76,724,000
1896	14	202,959,500
1901	(b) 12	(a) 209,000,000
1906	27	657,925,400
1908	36	682,594,525
1910	39	1,084,933,000
1911	44	1,390,376,257
1912	51	860,983,831
1913	52	1,073,699,999
1914	59	1,227,976,589
1915	65	1,643,765,212
1916	(c) 60	1,624,924,254
1917	(d) 61	(e) 1,500,000,000

(a) Estimated for Granite Creek.

(b) Sydney burnt in 1897 and not rebuilt.
Gaspé discontinued four years, 1898 to 1901.
Fraser not in operation in 1901.
Margaree opened in 1902.

(c) Four hatcheries transferred to Québec in 1915.
Granite Creek closed in 1915.

(d) Sandwich and Stuart closed in 1916.

Spray Lakes opened in 1917.

Cultus and Pitt Lakes opened in 1916 and '17 respectively.

(e) Subject to revision.

From 1905 to 1915 the following new Fish Breeding establishments were built:—

Maritime Provinces	21
Quebec	7
Ontario	7
Manitoba and Prairie Provinces	7
British Columbia	10
	52

In the three years immediately preceding the war, 17 new Fish Breeding establishments made their first distribution, viz., 6 in 1912, 4 in 1913, 7 in 1914, and in addition three large whitefish hatcheries commenced operations, and made their first distribution in the spring of 1915. During the ten years period above-mentioned 2 hatcheries on the Fraser River, B.C., were closed as no eggs could be collected for them; 1 in Manitoba, which was poorly located, was closed; and when the Provinces of Ontario and Québec undertook to attend to the propagation of the sporting fish—3 sport fish hatcheries in Ontario were closed, and 4 were transferred to the Province of Québec; but after allowing for all transfers, etc., there were 38 more hatcheries in operation in 1905 than there were in 1915.

A notable increase has also been made in the collection of eggs in many districts, as is shown by the following table of collections of eggs made in successive years:

	1914.	1915.
Whitefish	50,000,000	90,000,000
	1916.	1917.
"	100,000,000	150,000,000

The distribution of whitefish fry in Lake Winnipeg and the Prairie Provinces was increased by 650 per cent in the last five years. The distribution was as follows:

Whitefish Distribution in Lake Winnipeg and Prairie Provinces in Millions.

1912.	1913.	1914.	1915.	1916.	1917.
50	87½	110½	211½	266½	320

In the Bay of Quinte and in Manitoba the parent fish are taken in pound nets operated by the Department. There is also a close season for whitefish in Manitoba, and the areas in that Province, as well as in the Bay of Quinte, where the Department's nets are operated are reserved and closed to commercial fishing.

The distribution of fry of the different commercial or food fishes shows a steady increase. For instance, the distribution of whitefish in Ontario was increased from 64,000,000 in 1912 to 238,000,000 in 1916. The total whitefish distribution in Canada increased from 114,000,000 in 1912 to over 500,000,000 in 1916.

Distribution of Atlantic salmon increased from 9,000,000 in 1905 to 25,000,000 in 1917.

Distribution of salmon trout went from 3,500,000 in 1907 to 32,500,000 in 1917.

The Pickerel distribution was increased from 42,000,000 in 1912 to 180,000,000 in 1917.

The Pacific salmon distribution was increased from 16,000,000 in 1904 to 117,000,000 in 1914.

The expected big run of Sockeye in the Fraser River failed to make its appearance in 1917, and the hatcheries on that watershed are only partially filled, and unless more salmon are allowed to reach the spawning beds so that larger numbers of eggs may be hatched, either in the natural way or in hatcheries, the sockeye fishery of the Fraser River will soon be a thing of the past.

Methods of Collecting Eggs.

As the extent and success of the hatcheries is so largely governed by the quantity and the quality of the eggs collected, I would like to outline in a general way the different methods followed in collecting eggs.

The most of the eggs handled in our hatcheries are taken from fish that are put on the market, such as the whitefish, salmon trout, lake herring and pickerel. These fish in the Great Lakes are not protected by a close season, and they are taken in largest numbers just before and during the spawning season. Different methods of collecting eggs are followed with the different species. With the lobsters, for which there are 14 hatcheries in operation, the eggs are taken from the commercial catch, and after the eggs are procured the lobsters go on the market either alive or canned. With the anadromous species, such as the Atlantic and Pacific salmon, which are protected by a close season, the parent fish are taken in the rivers or estuaries on their way to the spawning beds. The Atlantic salmon in the St. John and Restigouche rivers are purchased from the commercial fishermen during June and July, and retained in tidal ponds until they are ripe. After the eggs are obtained, the parent salmon are liberated, and in some instances the same fish have been taken in two successive years. At Tadoussac the parent fish are taken in nets operated by the Department, and in the Margaree and Miramichi rivers the late run of salmon which ascends the rivers after the beginning of the close season are taken in nets authorized for the purpose.

The greater part of the speckled trout eggs are obtained from fish captured by careful and reliable men at the rate of 10c each. These fish are liberated after they are stripped, and 25 per cent of the fry is returned to the waters in which the parent fish are taken. At other places the fish are captured and all the work is done by Departmental employees.

In the Great Lakes where there is no close season, the most of the whitefish and salmon trout eggs are procured from the commercial catch of fish. In some cases the eggs are taken and fertilized by the fishermen who are paid by the quart for them. Quite a large number are taken in nets operated by the Department, namely, in the Bay of Quinte, and The Lake of the Woods. Salmon trout eggs are obtained from the commercial catch. Spawn takers are placed on the fishing tugs who collect and fertilize the eggs. In Colpoys Bay pound nets are operated for hatchery purposes, and those who operate the nets receive for their remuneration the fish after they are stripped. Pound nets are not otherwise permitted in this area.

In areas where there is no close season the pickerel

eggs are obtained from the commercial catch of fish, but in areas where there are close seasons the pickerel eggs are obtained by the Department's officers, or by men working under their direction.

In Lake Winnipeg and Winnipegosis all the whitefish eggs are obtained in closed areas, and in nets operated by the Department's officers. At Dauphin River, Lake Winnipeg, the annual collection of whitefish eggs from fish taken in one pound net is now about 400,000,000. In the Waterhen River, Lake Winnipegosis, the collection, which is made in the same way, is in a normal season upwards of 100,000,000 eggs.

Most of the eggs of the Pacific salmon are obtained from fish taken on their way to, or after they have reached the spawning grounds. The salmon are intercepted as they ascend the river by fencing the streams. These salmon do not survive spawning, and those that are in the best condition are distributed amongst the Indians for food.

Co-operation of the Fishermen Essential.

Fish Culture can do a great deal in keeping up the supply of fish in our lakes and rivers, but like everything else it's possibilities have a limit, and unless the hatcheries receive sufficient eggs to enable them to liberate sufficient fry to make up for the toll taken by the fishermen, there is only one result, namely, a decreasing fishery and in time utter depletion. The Department has been urged to build more hatcheries, but what is the use of hatcheries if the eggs to fill them are not supplied, and in this connection I am sorry to say that a large number of fishermen do not appear to appreciate the work that the hatcheries are doing, and do not afford that measure of co-operation and assistance that in their own interests, anyone would expect of them. I am glad to be able to say that in some individual cases, and in certain areas they appreciate the work of the hatcheries, and have given every reasonable assistance in collecting eggs, but as a general rule there is room for a vast improvement. In one case during the season just closed a fisherman, after he had given detailed directions in taking and handling the eggs, and was supplied with the necessary pans, collected no eggs whatever and did not even move the pans, etc., from where they were placed for him.

So long as there are no close seasons and hatcheries are depended upon to maintain the fisheries, their prosperity, particularly in waters where the eggs are obtained from the commercial catch depends to a very large extent upon the fishermen themselves and the number of eggs that they save, and the assistance they give in procuring for the hatcheries the eggs of every fish that is ripe when it is caught. If the required number of eggs is not supplied and hatched, and the required number of fry is not distributed, the only alternative is to enact restrictive and protective legislation, and to establish close seasons sufficient to maintain the supply of fish by natural and artificial propagation, and I am sure that the fishermen of Lake Erie do not wish to have close seasons again enforced.

The Department's Policy.

For several years preceding the outbreak of the War, the Fish Breeding Service was extended and new hatcheries were built as it was demonstrated that

more eggs were available than the existing hatcheries could accommodate, and the hatcheries could always have carried more eggs than were collected.

Efficacy of Hatcheries and Protection.

The efficacy of artificial propagation, joined with judicious protection, as a means of maintaining and increasing the prosperity of the fisheries has been long established beyond all doubt, but I would like to refer to what the Restigouche hatchery and the enforcement of the regulations has done for the angling and the commercial fishery of the Restigouche River.

Forty-five years ago the salmon rivers of the Atlantic coast were in a depleted condition, and in speaking of the angling in the Restigouche, the fishery officer in 1871 says that, "I do not consider the main Restigouche River capable of affording good fishing to more than four rods."

Forty-five years later the present hatchery officer reports that "the yield of the commercial salmon fishery in the bay (Chaleur) last season, 1916, far exceeded that of anything ever known in the history of the district. The majority of the stands made immense catches, so great in fact that the freezers became filled before the close of the fishery, and the dealers absolutely refused to buy the fish. I heard of some netters having as many as 50 fish when they raised their traps for the season. Some good scores were made and on the whole, hear that the anglers are well satisfied, and that the rivers are now well filled with stocked fish. The fish were even larger than usual. Two gentlemen holding water on the lower Matapedia made a score of some 30 fish in ten days with an average of 27 pounds. This is the largest ever known on the Restigouche or its tributaries. I heard from one buyer that the first 12,000 pounds he purchased, the fish averaged over 25 pounds. This is something unusual.

"I have heard of large numbers of adult fish going up the small brooks to spawn, something unheard of a few years ago, but as the fish increase in the main streams a large percentage will ascend the small brooks to spawn.

"There has not been a poor year on the Restigouche now for ten or twelve years, and I am quite sure that with the protection and hatchery work there will not be a return of any more off years. The salmon fishery is certainly a mine of wealth to this section of the country.

"The catch of salmon last year will probably exceed a million pounds in the bay of Chaleur, and at 10c. per pound, amounts to \$100,000.00.

"The New Brunswick Government angling waters on the Restigouche were sold at public auction at Fredericton for the first time in 1883, the Restigouche waters realizing \$2,045.00, and the Upsalquitch \$210. The value of these Government waters gradually increased from year to year, and in 1903, twenty years later, the same waters were netting the Provincial Government the handsome return of \$10,820.00.

"It is certainly interesting to compare the above figures with the present conditions and prices now being asked and paid.

"I notice the Government waters on the Restigouche were offered for sale at public auction at Fredericton on March 21, 1917. The total upset price on the various sections was \$17,750. This does not include the Quebec side of the river, neither does it include the Upsalquitch river, which is now under rental at \$3,000 per annum, as against \$1,000 in 1903. The

upset price of \$17,750, for the sections that will be put up at auction, and the rental of \$3,000 that is paid for the Upsalquitch, amounts to \$20,750, as against the rentals amounting to \$10,820 that were paid in 1903. These figures are evidence of the present value of the salmon fishery and the conditions of the rivers."

What is true of the Restigouche is to a more or less extent true of all the salmon rivers on the Atlantic Coast. As a result of the hatchery at Kelly's Pond near Charlottetown, salmon are again found in large numbers in all the larger streams of Prince Edward Island, where they were seldom seen ten years ago. The same condition obtains in many streams in New Brunswick and Nova Scotia, and last season (1917) salmon and grilse were taken with the fly in the Nashua River, N.B., where they have seldom been seen for fifty years.

The hatcheries are also credited with the present condition of the whitefish fishery of Lake Ontario and Lake Erie, which was seldom better than it was last season.

I have not been able to compare statistics for the last five years, but in 1912 the total average catch of whitefish in Lake Erie and the Detroit River by Americans and Canadians was nearly four times as great as it was twenty years previously. (Whitefish of the Great Lakes, M. J. Patton), and in Lake Ontario it was a little less than twice as great. In Lake Ontario on the Canadian side, the whitefish catch of 1916 was also double that of 1911, and in 1917 conditions were still better, and I was told by several fishermen that the fishing in the Bay of Quinte last fall was the best in their experience.

Conclusion.

Canada has always held a leading place in fish culture, and I think that I am safe in saying that to-day her Fish Breeding Service is second only to that of the United States. She has 49 hatcheries, 11 sub-hatcheries, 6 salmon ponds, and 1 lobster pond in operation. Her annual fish breeding appropriation is \$400,000, but since the outbreak of the war few new hatcheries have been built, and the full appropriation has not been spent.

Warden N. S. Cornell here asked the question of how he accounted for the fact that the production of eggs in Port Stanley last year was the worst for several years. He stated that they had done their best to get the eggs, but had been unable to do so. As a result, he stated, we had to pay men as high as \$296 per week.

The speaker answered that he thought it was partly due to lack of co-operation on the part of fishermen, as one tug had produced 72 qts. of herring eggs, while another had run about eight quarts.

Mr. Cornell further stated that he would rather lose the eggs out of Lake Erie than have eggs introduced from Lake Huron, as it meant a difference of about three cents per pound on the New York market.

Bert Westcott of Kingsville, stated that 1917 was a bad season all round for fish hatching, and adverse conditions had reigned in almost every kind of spawn. He went further to illustrate that while his company in 1915 turned over 1,040 quarts of white fish eggs to the Dominion Government and the Put-in-Bay hatcheries, in 1916 they had turned over 1,012 quarts, and in 1917 only 176 quarts.

Address by Mr. S. W. Downey

(Superintendent of the Federal Hatchery, Put-in-Bay, Mich., before the Lake Erie Fishermen's Association, City Hall, St. Thomas, Ont., February 11th, 1918.)

Evidently something that I said at that time that I first had the pleasure of meeting your Hon. Officer of Fisheries, Mr. Schleihaut, gave him the impression that I knew something about the propagation of the fishes of the Great Lakes, for he wrote to me asking that I come over and address this meeting; and upon my informing him that I was not a public speaker and could not comply with his request, he said, "Then if you can't make a speech, come over and tell us a story," and assuming, I suppose, that the subject of fish would be the one that I would be the least likely to fall down on, he said, "Tell us a fish story," and as fish stories have been in vogue ever since the incidents were occurring from which the Bible was written, I could not well refuse. You know that in holy writ, we read of one, Jonah, having been swallowed by a whale, and after three days' residence in the whale's belly, was spewed up on dry land. There is no record of just why the whale disgorged Jonah, but it is just possible that he had been smoking cut plug or natural leaf and the nicotine was too strong for the whale's stomach. However, be that as it may, it seems that ever since the telling of this whale of a story, anybody and everybody consider themselves licensed to tell fish stories.

But I am inclined to think that the story that Mr. Schleihaut really expected me to tell at this time, is a true statement along the lines of artificial propagation of the better species of the fishes of the Great Lakes, together with my opinion of the good resulting from the work; also for my reasons for thinking that this work is necessary.

Why is Artificial Propagation Necessary?

In trying to answer this question we will confine our remarks to the discussion of that best of all fresh water fishes, the whitefish, and the same reasoning will apply to all the other species of fishes, of the Great Lakes that are being propagated for the purpose of perpetuating the fishing industry, and the conservation of one of the best and cheapest natural food supplies that God has given us; and, as the time for preparing an article on this subject is limited, I will take the liberty of quoting verbatim an article that was prepared by myself, and read before the Fourth "International Fisheries Congress" held at Washington, D.C., in 1908, entitled, "Plans for Promoting the Whitefish Production in the Great Lakes."

"In discussing this subject it will first be necessary that we understand something of the habits and the manner of reproduction of these fishes, and the probable increase and losses in numbers under natural conditions; and since the same conditions exist, and the same reasoning will apply to all the lines of the chain, we will confine our remarks to the conditions in Lake Erie.

Breeding Habits and Natural Reproduction of the Whitefish.

The adult whitefishes are migratory, leaving the lower end of the lake and the deeper waters each year as the spawning season approaches and the breeding instinct prompts them, seeking their natural spawning beds, which consist of the reefs among the islands

and the rocky and sandy bottoms of the shoaler portions of the lake. Most of these reefs and shoals are of that particular formation called "honeycombed rock"—that is, instead of being gravelly or smooth, these rocks are dotted with holes and small cavities, into which the eggs, as they are voided by the fish, may drop and be comparatively safe from being eaten by the suckers and other spawn-eating fishes, water lizards, or other enemies, and also from being covered by mud, silt, and other filth, and smothered, as they would be if deposited upon mud bottom.

Were the whitefish nest builders, and did they pair as some of the other fishes do so as to perform the function of fertilizing their eggs with any degree of certainty, the chances for a large production of young under such favorable conditions, would be very good indeed. But they are not nest builders; neither do they mate; on the contrary, they approach the spawning grounds singly and in schools, and are what are known as "school spawners," the female extruding her eggs wherever she may happen to be, regardless of whether there is a male fish within close proximity or not. In consequence, but very few of the fish come together so as to perform the functions of fertilization. And when it is known, as was demonstrated by Mr. J. J. Stranahan, by a very careful experiment in the fall of 1897, that the life of an unfertilized whitefish egg, if left under water, is less than four minutes, while more than 50 per cent of them perish in $1\frac{1}{2}$ minutes, and the life germ contained in the milt of the male fish may be fairly supposed to live no longer under the same conditions, it will readily be seen that the percentage of eggs fertilized under natural conditions must of a necessity be very small. In fact it is estimated by those fish culturists who have had most to do with the propagation of whitefish that not more than one per cent of the eggs are fertilized when deposited under natural conditions. Now at this rate let us see how many fertile eggs each pair of adult whitefish will produce each season. It is estimated that the average number of eggs produced annually by each female whitefish is 35,000. The greatest number of eggs the writer has ever known to be secured from one fish was 150,000 from a fish weighing 11 pounds, giving 13,636 eggs to the pound of fish. This would be equivalent to a little more than 37,000 eggs to the fish weighing $2\frac{3}{4}$ pounds, and as the average weight of the spawning whitefish is from $2\frac{1}{2}$ to 3 pounds, it will be seen that 35,000 eggs to the fish should be nearly correct. Then if each pair of whitefish produce 35,000 eggs, and but one per cent of them are fertilized, 350 fertile eggs to the pair is all that can be expected to commence with. As the period of incubation for whitefish eggs is from 128 to 150 days, and as these fertile eggs must lie on the lake bottom all this time, in danger of destruction by being smothered in mud or filth as previously shown, and exposed to the still greater danger of being eaten by all kinds of aquatic life that feed at the lake bottom, it is quite evident that but few of these 350 fertile eggs will survive to reach the fry stage. It is evident, moreover, that nature never intended there should be such a large increase in numbers as would result from anything like a perfect fertilization and hatch, for in that case the lake in a short time would be so densely inhabited that the waters could not produce sufficient food for all; neither would there be room in the lake for them if they came to maturity. It is therefore safe to suppose that naturally the number increases but

little if it over-balances the loss, and reasoning from the known to the unknown, we are sure that this is true.

The number of young produced each year by those fishes, of which there is a large number, which carry their young through the period of incubation and produce them alive so far as the writer has been able to learn, ranges from one to 22, giving an average of 11 young to each pair of fish; and as these fishes are very numerous where found, it appears that this rate of increase in the fry state is sufficient to more than overcome the losses under natural conditions. Thus by analogy we have the proof that an increase of 11 young from each pair of fish of any kind including whitefish is more than enough to overcome the natural losses.

Work of the Hatcheries.

But the whitefish on account of being such an excellent food fish, is more sought after than many others and is taken by every device that man has been able to invent and in the greatest numbers possible on all occasions, so that the natural losses are many times multiplied by this take of fish which may justly be termed "artificial" losses. Now if this artificial loss is continued, then in order that the loss shall not greatly overbalance the natural production, there must of a necessity be introduced an artificial increase. Happily, this can be accomplished, in fact is being accomplished in several places by the aid of the hatcheries. The method employed is to have men go out with the commercial fishermen when they raise their nets, and collect the eggs from the ripe fish. This is done by expelling the eggs from the female fish into a common milk pan in as dry a state as possible, after which they are fertilized by using the milt of the ripe male fish immediately. They are then carefully washed, brought to the hatchery and placed in the jars, where they remain until hatched. In addition to this method of saving the eggs, many fish are penned each year. This is done by hanging a net on the back of that part of the pound net called the crib and when the fish first commence coming onto the grounds, before they are ripe enough to spawn, the fishermen as they raise their nets take out the unripe fish and place them in the nets on the back of the crib. Then the station tug, which is provided with large tanks on deck through which a stream of water is constantly pumped, visits these nets and takes out the fish, transferring them to the tanks and conveying them to the station where they are transferred to the pens. Here they are held until they ripen when the eggs are secured, and the fish after a few days when they have regained their normal condition are returned to the fishermen from whom they were obtained and are sent to market. It is perhaps well to say in this connection that spawning the whitefish in this manner in no way injures them for food; in fact these fish that are spawned and then held a few days before putting them on the market are in much better condition for consumption than if they had been marketed while still carrying the eggs. Moreover, the whitefish, unlike many others, is in the best condition for food at spawning time for the reason that it is very fat and the flesh is juicy and sweet, and the water temperature being low at this time the flesh is firm and flaky; while earlier in the season, when the water is yet warm the flesh is much softer and the flavor not as fine. But not to digress further, we will continue by saying that from the fish collected and held in pens as described

above, we have collected in a single season at one point along 122,160,000 eggs of fair quality. In other instances, where the fishermen operate on a small scale and small boats are used for the purpose, arrangements are made whereby the fishermen collect the eggs themselves, and are paid for them at so much per quart for fertile eggs, whereas if we put men in boats to spawn the fish we pay nothing for the eggs as the fishermen are directly benefited by the work of propagation. These small operators usually fish gill nets on the reefs, and as the whitefish do not frequent the reefs until ready to spawn, from 50 to 75 per cent of their catch are ripe fish.

Measures Necessary to Insure Increased Production.

From a practical experience in whitefish work of over thirty years, and by consultation with other fish culturists, we find that the average hatch of the eggs collected and taken to the hatcheries is from 75 to 85 per cent. Assuming the lower figure to be the correct one, if each pair of whitefish, as was previously shown, produce 35,000 eggs, by the assistance of the hatcheries we get three-fourths of 35,000 or 26,331 fry as against the 11 fry that these same fish would have produced if the eggs had been left to themselves, or 2,393 times as many as it was intended by nature for them to produce. Even allowing that the whole of the 1 per cent naturally fertilized hatch, giving 350 fry as the number produced by each pair of fry, the hatchery would still beat nature by 25,981 fry, or a little over 74 times as many and the fry produced at the hatcheries are just as strong and vigorous, and their chances for reaching maturity are just as great as are those hatched naturally. Then if by the lower calculation we produce 74 times as many fry by collecting the eggs and hatching them at the hatcheries as the fish would produce if left to themselves, it is obvious that the best plan to promote the whitefish production of the great lakes is:

To so arrange matters that artificial propagation shall be generally applied to the reproduction by having hatcheries established at every available point where a sufficient number of eggs can be secured to warrant their maintenance. It is not necessary that the hatcheries be operated upon as large a scale as those at Detroit, Sandwich and Put-in-Bay, but wherever enough eggs can be secured to give a hatch of from 25 to 50 millions, if these points are remote from the larger stations, put up a hatchery and operate upon as economical a scale as possible to stock these hatcheries, not only collecting the eggs from the ripe fish as caught by the fishermen, but penning and holding the green, but nearly ripe fish, until they do ripen, pursuing the method described above so that practically all the fish caught will have contributed toward this production before being placed upon the market.

To make this plan the more effective, so as to get the greatest increase possible from the fish caught, a law should be enacted compelling the fishermen to collect, or allow the hatcheries to collect, all the eggs from the ripe fish, and to place the green fish in the auxiliary nets for penning; the fishermen to be paid a fair price for the eggs so taken by them, and a fair remuneration for their labor in penning the fish, and to receive pay for all fish lost in penning.

As a further part of the plan we would have a law enacted prohibiting the taking or the offering for sale any undersized whitefish, making the size limit large enough so that every fish before being placed

on the market would have had a chance to reproduce at least once and thereby contributing toward increasing the production.

This plan should not only be universal with the states bordering upon the Great Lakes, but should be international, making the same conditions on the Canadian side as in the States and preventing any loophole through which the regulations could be evaded.

This plan would be strengthened by making a closed season during the heat of summer when it is so nearly impossible to get to market in an edible condition on account of the hot weather and the high temperature of the water from which they must of a necessity be taken. All the fish taken at this time of year are a total loss to reproduction, as they go to market with all their unripe eggs in their ovaries, and for every female so taken there is a loss to reproduction of from 11 to 350 fry if it had been left to spawn naturally, or of approximately 26,000 fry if the eggs were allowed to ripen, collected and hatched at a hatchery.

That you may form some idea of the amount of work accomplished by the hatcheries, I have prepared a table showing the number of eggs collected from each species of fish propagated at the Put-in-Bay station during the past 16 years.

Number of Eggs Collected During the Years From
1900 to 1915.

	Whitefish.	Pike-Perch.	Lake Herring.	Lake Trout.	Perch.
1900.....	194,234,000	138,900,000	61,760,000		
1901.....	335,860,000	341,025,000			
1902.....	256,000,000	305,000,000	47,680,000		
1903.....	54,564,000	325,000,000		1,500,000	
1904.....	237,774,000	431,375,000		1,900,000	
1905.....	226,931,000	380,250,000	228,640,000	2,000,000	
1906.....	186,409,000	422,100,000	84,470,000	2,000,000	
1907.....	336,250,000	784,750,000	18,325,000	2,000,000	
1908.....	373,046,000	616,775,000			
1909.....	219,508,000	663,600,000	104,000,000		
1910.....	310,440,000	594,050,000	73,400,000		
1911.....	82,280,000	797,905,000			
1912.....	350,080,000	239,000,000			
1913.....	488,240,000	133,500,000			8,064,000
1914.....	479,290,000	592,000,000	7,700,000	2,000,000	10,856,000
1915.....	351,081,000	511,715,000			
Totals.....	4,481,987,000	7,276,945,000	625,975,000	9,400,000	18,920,000

Making a grand total of 12,413,227,000 eggs received at the station during this time. It would be well to state right here, that not all the eggs taken at this station were kept and hatched here, but nearly one-half of them were shipped to other points to be hatched, but from the eggs retained at the station there were hatched and distributed fry of the different species of fish, in totals as follows:—Whitefish, 2,100,560,000; pike-perch, 1,845,980,000; lake herring, 164,910,000; lake trout, 4,796,000 and about 6,000,000 of the common perch. Showing an average hatch of 142,535,000 whitefish, 115,373,750 pike-perch, 20,614,500 lake herring for the eight years that herring were propagated, and 959,100 lake trout for the five years that they were propagated and 3,000,000 perch for the two years that they were handled.

A comparison of this table by a series of years will show that the first five years produced: Whitefish eggs 1,078,432,000 and pike-perch 1,541,300,000; the next five years, 1,542,144,000 and pike-perch 2,767,495,

000; the last five years, 1,750,971,000 and pike-perch 2,274,120,000.

The second five years showing an increase in round numbers of 500,000,000 whitefish eggs, and 1,200,000,000 pike-perch eggs, and the last five years shows an increase of 200,000,000 whitefish eggs, and a falling off of pike-perch eggs of nearly 500,000,000 from the second series, but still retaining an increase of nearly a billion of eggs over the first five years, and the last year of the table, 1915 shows a take of 351,080,000 whitefish and 511,715,000 pike-perch eggs, as against 174,234,000 whitefish and 138,900,000 pike-perch eggs in 1900 the first year, an increase of nearly double for the whitefish, and more than three times as many of the pike-perch eggs. And this gain in the collection of eggs has not been accomplished by extending the field of operations. We are covering practically the same area as before, but with less advantages for securing the eggs, for in addition to the change in the manner of fishing in the vicinity of the station from the pound net to the trap net, thereby eliminating all chance of penning fish for their eggs, the Ohio State hatchery erected about eight years since but a few rods from us receive some of the eggs from this field, yet notwithstanding the fact that the fishing has been

prosecuted to the fullest extent all these years and the greatest number of fish removed from the lake, the take of eggs has steadily increased and as the number of eggs to the fish has not increased, there must have been an increase in the take of fish, and why should it not be the case; this last spring we liberated in Lake Erie 209 millions of whitefish fry, and while we place no insurance on them, nor guarantee any certain percent of them reaching maturity, yet we do know that there are just 209 millions more chances for mature fish than there would have been had we not been in operation; for every one of the eggs from which these fish were produced would have gone to market with the fish and been a total loss to reproduction. "But," I hear some closed season advocate say, "if those fish had been left in the lake to reproduce, would they not have produced these fry themselves!" To this I will reply, "They certainly would, but it would take them from 74 to 2,392 years to do it," as was shown heretofore, and I do not think that even the advo-

cate of a closed spawning season, would care to wait that long for a mess of fish.

But the proper thing for all those living on the borders of the Great Lakes, and especially those interested directly or indirectly in either the fishing industry, or the propagation of fish and the conservation of this great natural food supply, is to work on some plan whereby the adult fish may be removed from the waters, placed on the market for food for the people, at the same time providing employment for thousands of men at good wages, and at the same time not only maintain the number of fish now in the lakes but provide a steady increase, and gentlemen, I believe that this not only can be done, but that it is being done to-day by the aid of the hatcheries.

Is the Propagation of Fish an Economical Measure? That is Aside From the Conservation of a Food Supply!

Let us see: During the fiscal year 1915, there were supplied from the Put-in-Bay, Ohio, Station, to be hatched at other points, 235,700,000 whitefish and 305,450,000 pike-perch eggs, and from the eggs retained at the station there were hatched and distributed 209 millions whitefish and 56 millions pike-perch fry, making 265 millions all told. This work was all done at a total cost of \$14,591. Now if 10 per cent of these fish live and reach a weight of 2½ pounds each, we will have 66,250,000 lbs. of fish, worth to the con-

sumer to-day 15c a pound, amounting to \$9,937,500; but, some will say, "We don't think that 10 per cent of the fry planted will reach maturity: well we think there will, but not to be hoggish in the matter, let us say 1 per cent reach the 2½ lbs. This will give us 6,625,000 lbs., which at the same price will give a valuation of \$993,750, which is a little more than 6,810 times the cost of production, or 6,810 per cent on the investment: a better rate of interest, even than John D. Rockefeller makes in the oil business.

The reason for my thinking that 10 per cent or more of the fry planted reach maturity, is from the results of experiments along this line. Somewhere about twenty-two years ago there were liberated in the Clacamas River on the Pacific Coast, 5,000 marked salmon fingerlings; about four years later the State Fish Commissioner of the State of Oregon, had notices put in the papers telling the fishermen of these marked fish, and asking that all the fish caught so marked be sent to him and he would pay the market price for them, and as a result, these were either seven fish less, or seven more, than 10 per cent of the number liberated sent to the Commissioner. And of course not all the marked fish that entered the Columbia River were caught, nor were all those that were caught sent to the Commissioner, but there were enough to show conclusively that a much larger percentage of the young fish liberated reach maturity than was at first supposed there would be.

Canadian Markets

An address delivered at the Lake Erie Fishermen's Association,
St. Thomas, Ont., 1918.

I have been wondering why our President, Mr. Ponsford, selected me to address the members of this association on the subject of Canadian Markets when there are so many fishermen present who have had years of experience in this industry and during that time have been catering to our home trade, while I am practically a new comer. However I will endeavor to give you a short history of my entry into this field and the circumstances which led me to seek an outlet for our production through the channels of the retail trade in Canada.

My early experience in trying to market our fish in Canada was very discouraging. At the time I am speaking of we were doing some business with a prominent Ontario wholesale house. Invariably on talking to these people we would be asked the question, "what have you got to-day?" If we were fortunate enough to be able to answer, we have several tons of herring, and we were able to agree on price with our Ontario dealer, the answer would likely be, "let me have ten or twenty boxes, on the other hand the same question put to an American consignor, if price were satisfactory, brought forth the answer, "let them come." These were the conditions that existed when I came into the business some eight years ago, and these are the conditions, as far as I know, that exist today. If your production is large it is absolutely impossible to market it in Canada. Catering to the Canadian trade has been a fad with me for several years and I am fain to confess that with the possible exception of three years we would have been better off if we had let this market entirely alone. Perhaps an explanation of how we



W. G. Westcott, Kingsville, Ont.

came to get into the Canadian market would be in order. We were selling a prominent wholesale considerable quantities of Lake Erie Whitefish. At this particular time we received an inquiry from a Toronto Departmental Store asking us to quote them on Lake Erie Whitefish, which I can assure you we immediately did. We were agreeably surprised to receive by return mail an order for one thousand pounds of Whitefish to be shipped each week during our operating season. I do not think the first shipment of these fish had been delivered to the consignor by the Express Co. before we received a long distance telephone call from our friend the wholesaler telling us if we proposed selling the retail trade we certainly could not sell him. Well I am frank in saying to you, for a little while we felt the fat was in the fire, we tried to compromise the matter by asking our friend the wholesaler to take at least a part of our surplus at a reasonable price and we in turn would leave the retail trade alone, this they absolutely refused to do. After consulting my associates we decided to go after the retail trade and go after it hard, today we are canvassing practically every town of any importance from Montreal to Windsor, I may say to you our expectations were more than realized, as the demand has always exceeded the supply. Now do not let me mislead you into thinking this demand includes all varieties of fish produced in Lake Erie, but for Whitefish only. Considerable notoriety has been given the fishing industry by articles appearing in the Canadian press advocating an investigation into the high cost of Canadian lake fish to Canadian consumers, others going as far as to suggest an embargo on the exportation of these fish to the United States. Let me say to you, gentlemen, that I have good reasons to believe that in a normal year two of our gill net tugs will produce in their fishing season all the fish such as herring, blue pike and perch, that is consumed in the Province of Ontario in an entire year. Prohibiting the exportation would not mean cheap fish for Canadians but would simply mean that the Canadian fishermen would have to go out of business as it would be absolutely impossible to dispose of their product at any price in this country. Now in conclusion I wish to say the Canadian market is a discriminating one. You should give as much attention to the care of your fish as for the American market, be particular in your packing, if you sell a man one hundred pounds of fish be sure you give him one hundred pounds. A nice clean box is very much better than one that looks as though it had been in use since Adam's time. Ice is cheap, use plenty of it, and I venture to say you will have no trouble in this market.

Gentlemen, I thank you for your attention and I trust we will all be spared to attend our next annual meeting which will be held early in 1919.

NOTES ON THE RESULTS OF SEA FISHING OPERATIONS IN CANADA DURING THE MONTH OF FEBRUARY.

February is usually the poorest fishing month of the year, especially on the Atlantic coast. The winter haddock fishing in boats is over, and the fishermen take advantage of this slack and often stormy period to put their boats and gear in order for the more extensive spring and summer fishery.

The weather during February of the present year

was more severe than usual in the east. Notwithstanding this, the total quantity of cod, haddock, hake and pollock landed was about equal to that landed in February last year. The figures are 22,045 cwts., against 22,246 cwts. Cod and hake landings were somewhat greater, but haddock and pollock landings were less. The bulk of the deliveries of these fish for one month on the Atlantic coast has to be credited to steam trawlers.

The outstanding feature of the month's fisheries is the great quantity of herring landed in British Columbia, which practically constitutes the total landing of herring in the whole of Canada. The catch amounted to 244,300 cwts. from which there were canned 57,148 cases of 48 pounds; while almost 13,000 barrels were cured in what is known as the Scotch style. The catch for February last year was 46,650 cwts. from which were packed 7,118 cases of canned and 350 barrels of Scotch cured.

The quantity of halibut landed in Canada, chiefly in British Columbia, was 690 cwts., less than that landed during the same month last year, but the value was almost \$60,000 greater.

The smelt fishery, which is carried on mainly along the southern shores of the Gulf of St. Lawrence, produced 15,364 cwts. from the 1st to the 15th of the month, when the season for net fishing closed. This is rather less than the catch for February last year. The open season was extended to February 25th last year, however.

The current lobster season opened on the 15th of November last in Charlotte and St. John counties, New Brunswick, and is now in progress on both sides of the Bay of Fundy, and on the Nova Scotia coast as far east as Halifax harbor. Up to the end of February, the total pack was 3,061 cases, while 6,570 cwts. were shipped fresh in shell to market. During the corresponding period in the preceding year the pack was 4,922 cases and the shipment in shell 13,845 cwts.

The total value in first hands of all sea fish landed in Canada during February was \$936,533 against \$580,864 for the same month last year. The increase is due almost altogether to the greater herring catch in British Columbia.

NEW FISHERY REGULATIONS.

Honorable Mr. Ballantyne, Minister of the Naval Service, of which Department the Fisheries Branch forms a part, is giving close attention to the fishing industry, and he is having the regulations so modified as to enable the greatest possible production of fish, compatible with proper protection of the fisheries so as to prevent depletion.

By Order-in-Council of February 28th ultimo, several changes in the Fishery Regulations were made:—

1.—The use of purse-seines for catching pollock on the Atlantic coast has been authorized. Pollock is an excellent fish that vies with cod and haddock for use fresh. Indeed, those living on the coast purchase it for their tables as readily as either cod or haddock, and as its excellence is becoming known in the interior the demand for it there is rapidly growing. While the pollock belongs to a group of fishes like the cod and haddock that feed at the bottom, unlike them, it feeds at times near the surface. When it is so feeding it will not take the hook. Each summer vast quantities can be seen in the Bay of Fundy and around the

coast of Western Nova Scotia, but as they could not be captured excepting with purse-seines they were not caught in the bays. This prohibition has been removed, and as a result, hundreds of thousands of pounds of one of our choicest food fishes will be caught next summer over and above what would have otherwise been the case.

2.—For many years herring fishing has been prohibited around a certain portion of Grand Manan Island, N.B., on the assumption that it was a favorite spawning area for the herring. Investigation has proved this not to be the case, and this area has been thrown open for fishing, and will result in largely increased herring production in that vicinity.

3.—An important change in the lobster fishery regulations for the portion of the Maritime Province coast west of Halifax Harbor by the establishment of a size limit of 9 inches for lobsters has been made.

As this portion of the coast is available to the live lobster markets, and as it pays much better to sell lobsters in such markets than at the canneries, the general practice has been to ship lobsters 9 inches long and over to the United States live lobster markets, and send the smaller ones to the canneries. Last fiscal year 6,300,000 pounds of lobsters along this portion of the coast found their way to the local canneries, while about an equal quantity was shipped away to the live lobster markets.

The intensive fishery involved is telling on the supply of lobsters which has been declining from year to year, as is shown by the fact that five years ago over 8,000,000 pounds of lobsters were shipped to live lobster markets, and over 7,000,000 pounds were sent to the canneries. Lobsters do not lay eggs until they are about 9 inches long, and the number of eggs produced increases rapidly with the size of the lobster. A nine-inch limit will mean that no lobsters may be taken until they have reached maturity, and this will, it is hoped, check the decline in the lobster fishery that has been going on. While the regulation will likely have the effect of closing the canneries, it will in the course of a few years put more money in the pockets of the fishermen, as well as conserve and build up the industry.

This regulation will not become effective until after the end of the present fishing season.

4.—Years ago, shad was so abundant in the Bay of Fundy waters and tributary streams, that it was one of the most important fisheries there. The fresh fish markets were fully supplied, and over 10,000 barrels were yearly salted. By over-fishing, this choice fish has become so scarce that only a few hundred weights are now caught each season. Shad, like salmon, come back to the streams in which they are hatched, so that protection to any area will benefit that particular area. The restoration of the fishery by artificial hatching has been tried without success, as shad will die if handled, and only from 5 to 10 per cent. of the shad caught will yield eggs at the time. Experts are all agreed that the only effective way to re-establish a depleted fishery is to stop all fishing for a few years. By the regulation now adopted, no shad fishing will be permitted in the Bay of Fundy or tributary waters and streams for four years from March 17th, 1918. Hereafter regulations are provided to prevent future depletion.

5.—In the salmon gill-net fisheries in Northern British Columbia motor boats have not been used in the

past. A movement was on foot to introduce these boats, but it was strongly opposed by both the canners and fishermen. Hence, the use of motor boats in this fishery there has been prohibited.

FISHERY QUESTIONS WITH THE UNITED STATES SETTLED.

Honourable Mr. Ballantyne announced that an arrangement has been made, to last at least during the war, which settles long standing fishery questions between Canada and the United States. This is another evidence of how the two countries are striving to break down all barriers that stand in the way of greater production of food and the most ready transportation thereof. This arrangement is the first fruit of the work of the International Joint Commission, consisting of Honorable Chief Justice J. D. Hazen, G. J. Desbarats, Deputy Minister of the Naval Service, and W. A. Found, Superintendent of Fisheries, as the Canadian members, and Honorable W. C. Redfield, Secretary of Commerce, E. F. Sweet, Assistant Secretary of Commerce, and Doctor H. M. Smith, Commissioner of Fisheries, as the United States members, to consider the settlement of all outstanding fishery questions between the two countries.

While for some years past fish have been admitted into the United States free of duty, our fishermen have been unable to take full advantage of this, as Canadian fishing vessels were not permitted to go directly from the fishing grounds to United States ports, nor to clear from such ports back to the high seas, but had to go back to a port in Canada. Thus, all fish going into the United States had to be shipped in through the ordinary commercial channels. This involved delay and additional expense. The object of these laws was to prevent undue competition by Canadian fishing vessels with United States vessels in their own ports.

On the other hand, United States fishing vessels under treaty are not allowed to come to Canadian ports except for wood, water, shelter and repairs. While what were known as *modus vivendi* licenses have been issued to United States fishing vessels on the Atlantic coast applying therefor, authorizing the purchase of bait and fishing equipment, the shipping of crews and the transshipment of catches, such licenses were restricted to vessels driven by sails only. As nearly all the United States fleet has now motor power, few of them could procure these licenses. Not having these privileges involved serious loss of time and consequently smaller catches, owing to vessels having to go back to their home ports when short of supplies, etc., though they were fishing off the Canadian coast.

On the Pacific coast the privileges covered by the *modus vivendi* licenses have for years past been authorized by Order-in-Council to all United States fishing vessels, no matter how driven. This has proved advantageous to both countries, as while the fishing vessels do most of their business through British Columbia ports, they can make quicker trips, and consequently produce more fish, as such ports are nearer the fishing grounds.

Following the return of the United States section of the Commission from public sitting held by the Commission on the Atlantic coast, the Secretary of Commerce, with the authority of the President, under their war legislation, issued instructions to all their Customs' Officers to allow Canadian fishing ves-

Acadia Gas Engines, Ltd.	99	Gourcock Repowork Export Co., Ltd.	7	New England Fish Company, Ltd.	15
B.		Gosse-Millerd Packing Co., Ltd.	8	Niagara Motors Corporation	98
Biss, E. W. Co.	67	Gray and Prior Machine Co.	71	Noble, Charles, Jr., Co., Inc.	80
Booth Fisheries Co. of Canada, Ltd.	90	Guarantee Motor Co.	93	Northern Fish Co.	70
Bowman, J. and Co.	96	Guest, W. J., Fish Co. Ltd.	89	Nova Scotia Government	86
Bradman Henderson Co., Ltd.	63	H.		O.	
British Columbia Government	12	Hallam, John, Ltd.		Ontario Government	
British Columbia Packers' Association	14	Hamilton, R. S., Co.		O'Connor's Fish Market	93
Brown Engineering Corporation, Ltd.	81	Hart, E. F., Co.		P.	
Burnell Engine Co.	81	Hatton, D., Co.	17	Perfection Motor Co.	
		Hoover & Son, A.	81	Pitt, Fishmonger	93
		Hudson Fish Co.	73	Polson Iron Works	98
		Hyde Windlass Co.		Plymouth Cordage Co.	16
Caille Perfection Motor Co.	79	I.		Process Engineers, Ltd.	89
Canada Metal Co., Ltd.	68	Imperial Oil, Ltd.	60	Pyke, D., Co., Ltd., The	55
Canadian-Fairbanks-Morse Co., Ltd.		Independent Cordage Co., Ltd.	16	Q.	
Canadian Fish and Cold Storage Co., Ltd.	74	Independent Rubber Co., Ltd.	82	Quebec Government	92
Canadian Fisheries		J.		R.	
Canadian Fisheries Association		Jacobson Gas Engine Co.	93	Ranney Fish Co.	76
Canadian Fishing Co., Ltd.	15	James, F. T., Co., Ltd.	97	Robbins, Chas. C., Inc.	70
Canadian Ice Machine Co.	68	K.		Robbins, F. R. & Co.	70
Canadian Milk Products, Ltd.	88	Kernath Motor Co.		Roberts Motors	93
Canadian Oil Co., Ltd.		Kildala Packing Co., Ltd.	5	Robin, Jones and Whitman, Ltd.	93
Canadian Pearl Button Co., Ltd.		L.		Robinson, Thomas	85
Connors' Brothers, Ltd.	89	Leckie, John, Ltd.	18	S.	
Consumers Cordage Co., Ltd.	61	Leonard Fisheries, Ltd.	Back Cover	Seaboard Trading Co.	87
Cullen Motor Co.	71	Letson and Burpee, Ltd.	6	Scott and Co., Ernest	
Cutting and Washington	72	Lincoln, Willey and Co., Inc.	83	Seythes & Co., Ltd.	65
D.		Linde Canadian Refrigeration Co., Ltd.		Silver, H. R., Ltd.	88
Danto & Co.	60	Lipsett, Cunningham and Co., Ltd.	3	Smith Cannery Machines Co., Ltd.	82
Department of Naval Service	13	Lipsett, Edward	35	Stamford Foundry Co.	83
DesBrisay, M., and Co., Ltd.	4	Lockport Cold Storage Co., Ltd.	83	Standard Gas Engine Co., Front Cove	6
Disappearing Propeller Boat Co., Ltd.		Lockwood-Ash Motor Co.	75	St. Thomas Packing Co., Ltd.	77
Dominion Fisheries, Ltd.	88	Loggie, W. S. Co.	73	Spooner, W. R.	69
E.		London and Petrolia Barrel Co., Ltd.	84	Sprague Canning Mach. Co.	78
Edwards, W. C. & Co., Ltd.	72	Lyons, Chas. Co., Inc.	87	T.	
Eureka Refrigerator Co.	73	M.		Tabor, Geo., Ltd.	88
Evirude Motor Co.	94	Marconi Wireless	76	Thorne, W. H. and Co., Ltd.	
F.		Maritime Fish Corporation, Ltd.	91	Tuckett Tobacco Co., Ltd.	
Farquhar and Co., Ltd.	87	McAvity, T. & Sons, Ltd.	94	W.	
Finkelshten, Max	57	Mueller, Charles Co., Ltd.	84	Walker, Thos. and Son, Ltd.	93
Fish Trades Gazette	85	Mustad, O., and Son	7	Wallace Fisheries, Ltd.	10
Foreman Motor and Machine Co., Ltd.	81	N.		Wannenwetsch & Co.	74
Forge, Peter	84	New Brunswick Cold Storage Co., Ltd.	72	Wern Peters, Ltd.	95
Freeman and Cobb Co., Inc.	87			White and Co., Ltd.	94
Freeman, W. A., Co.	55			Whitman, Arthur N., Ltd.	9
G.				Whitall, A. R., Can. Co., Ltd.	72
Goodrich, B. F. and Co., Ltd.	59				

sels to come directly from the fishing grounds to United States ports, sell their catches there, procure all supplies and outfits and clear back to the fishing grounds, thus doing away entirely with the obstacles they previously experienced. Following this action, the Canadian Government authorized by Order-in-Council under the War Measures Act, that United States fishing vessels shall be permitted to come to our ports for similar privileges without the requirement of a license. As there is a duty in Canada, such duty will have to be paid on fish sold in our ports.

This complete reciprocity of port privileges will not only enable an important increase in the amount of fish produced to be made by the two countries, but will do away with irritating delays to vessels of either country in the ports of the other.

For years past United States lobster boats have been coming over to our coast and fishing outside our territorial waters during our close time inside, such waters, thus minimizing the good effects of our protective measures and causing annoyance to the local fishermen. On the recommendation of the Joint Commission, legislation has already been introduced into the United States Congress prohibiting the importation into that country of lobsters taken off our coasts during our close time, thus doing away with another source of trouble.

SPAWNING TAKERS' BOOKS RETURNED FROM POINT EDWARD, JAN. 18, 1918, SHOW FOLLOWING RECORD.

Merlin.	Herring.
Crewe Bros.	29 qts.
Wheatley.	
J. W. Liddle	35 "
Smith & Hodgson	14 "
Campbell & Long	3 "
E. McLean & Son	23/4 "
Olmstead & Getty	29 "
J. W. Bailey	5 "
	88 3/4 "
Erie Eau.	
J. Nichol	13 "
Norman McAuley	24 "
	37 "
Grand Total	154 3/4 "

The fishermen east of Crewe Bros., Merlin, were so crippled by storms that they stopped fishing as the fish commenced to spawn.

Merlin. Baldwin Bros, supplied no eggs, did not even move spawning equipment.

Wheatley.
Derbyshire & Campbell none
Stewart Anderson none
Lamarsh & Hopper none

KINGSVILLE HATCHERY, 1917.

Extract from statement of Samuel Adamson, dated Dec. 24. File 704-24-8.

Number of quarts of spawn taken at different parts of Kingsville Hatchery.

Whitefish.
Kingsville 331
Colchester 154

Arner	163	
Leamington	53	
Kingsville Harbour	75	
Bois Blanc	780 (a)	
	1,556	1,156
		40,000
		62,240,000

Herring.		
Port Stanley	583 (b)	
Wheatley	76 (c)	
	659	659
Total collection	659	2,215 quarts

- (a) Spawn collector claims 835 qts.
- (b) Acets passed for 534 qts.
- (c) Acets. passed for 88 3/4 qts.

KINGSVILLE HATCHERY 1917.

Whitefish.

Ottawa, January 24, 1918.	No. of quarts.	Address.
Company.		
Goodchilds, Dewey, &		
Carter & Cook	429 1/2	Amherstburg.
Manore Fish Co.	89	Arner
Dav'd Livingstone	113	Arner
Leamington Fish Co.	36	Leamington
Campbell & Long	17	Wheatley
White Bros	17	Harrow
Crewe Bros.	24	Merlin
John Bruner	74	Harrow
Lake Erie Fish Co.	173	Amherstburg
Northern Fish Co.	97	Kingsville
Urias Loop	71	Kingsville
Total	1140 1/2	

Eggs obtained from impounded fish 405 1/2 Bois Blanc
1546

COLLECTION OF HERRING SPAWN. Lake Erie.

Tug.	Qts. spawn.	
"Cisco"	41	\$16.40
"Choctaw"	31	12.40
"Donald Mac"	40 1/2	16.20
"Douglas H."	39	15.60
"Edward S."	72	28.80
"East Side"	40	16.00
"F. H. Stanley"	46	18.40
"Gordon Brown"	22 1/2	9.00
"Hattie Berry"	7 1/2	3.00
"J. R. Moore"	8	3.20
"Lulu May"	59	23.60
"McAuley"	32 1/2	13.00
"Morgan Bros."	26 1/2	10.60
"Onajag"	8	3.20
"Stanley Foster"	16 1/2	6.60
"Wilma"	9	3.60
"Elgin E."	23 1/2	9.40
"Morrison"	11 1/2	4.60
Total	534	@40c 213.60

ATTENTION!!

Lake Erie Fishermen.

The Finlay Fish Company

Port Stanley, Ontario

PLANTS AT

Port Maitland, Ontario.

Port Dover, Ontario.

Port Burwell, Ontario.

Port Stanley, Ontario.

REPRESENTING

F. R. Robbins Co., Buffalo, N. Y.

Finlay Fish Inc., New York, N. Y.

C. C. Robbins Inc., Chicago, Ill.

Unexcelled facilities for packing and marketing your catch, no need to worry about accomodation at any of above ports, we will take care of your fish and procure high prices.

Write or telephone Chas. Finlay, Port Stanley, Ontario, for further information.

FINLAY FISH COMPANY

Industrial Items

SIXTH ANNUAL CONVENTION.

The Canada Metal Co., Ltd., held the sixth Annual Convention of their sales staff at the head office in Toronto, commencing the week February 4th, and when one considers that representatives of the firm from all parts of the Dominion were present, and that trade conditions were discussed on all territories from the Atlantic to the Pacific coasts, it is no wonder that a most interesting and successful convention was the result. One salesman stated, "I have been selling met-

Mr. Harris also gave some good sound advice on square dealings. "Know your business," said he, "learn all there is to know about metals. Ask questions; teach and be taught, and thus ensure closer co-operation," and told how during the convention they would have the opportunity of seeing many lines manufactured, so that they could gain an accurate knowledge of what they were selling, and how and under what conditions various goods were manufactured.

Mr. Harris, Jr., Vice-President, presided at the Convention and opened by going through the Annual Report and he gave some interesting figures. All sales have increased, and 1917 was the best year to date

He further pointed out that no firm can stand still. It must either go ahead or go behind and to go ahead after a successful year required greater efforts, more concentrated efforts, and more carefully organized efforts. Particularly is it necessary to take into consideration that some day the war will end, and give every business a tremendous jolt during the re-organization which is bound to follow. Only those firms who prepare for after the war conditions can hope to reap the benefit when normal times arrive and this is our reason why the organization must be kept to the highest pitch of efficiency.

Thirty-four items were on the Agenda and following the review of General Sales was the presentation of the prizes for the various sales competitions. Then came a visit to the lead rolls and samples of galena lead ore were exhibited, and an address on how the ore was mined, smelted, or in some cases treated by electrolytic process to give the pure lead.



W. G. HARRIS, Sen.

als all my life, and the first year we met I thought there was nothing more for me to learn, yet when I hear the views and knowledge of our other salesmen, I decide that as long as I live it will be necessary to come to these conventions with an open mind ready to digest and benefit all that is possible by the knowledge of others. The exchange of ideas and experiences gives a wider viewpoint and educates one for all emergencies.

Mr. W. G. Harris, Sr., President of the company, gave an address of welcome, and expressed his great pleasure in once more meeting the staff.

Only once a year, he said, is it possible for us all to meet; and year by year the family grows, and today we have here managers and their salesmen, not only from head office, but also from our factories in Hamilton, Montreal, Winnipeg, and Vancouver. "In 1911," he further added, "we moved to our new factory on Fraser Avenue, and to illustrate the growth of our business, may state that not only is our staff increased by more than twenty salesmen, but this factory has been enlarged five times in the period to cope with the great demand for our goods. We have also built factories and are manufacturing most of our lines in Montreal and Winnipeg. Our progress," he continued, "has been remarkable and our success has been built on a sure foundation. The motto we stand by is service and dependability. Give excellent service, manufacture and sell goods of dependable quality and success is bound to follow."



W. G. HARRIS, Jr.

Then following the melting of the lead into slabs, and sheets were rolled in various thicknesses from 1-16" to 1/4" and in widths up to 7' 6" and any lengths. Next a visit was made to the fine rolls where the process of rolling fine lead or tin foils was witnessed, thus illustrating the fact that salesmen could see that

GET READY

with

Lion Brand Cordage



Fitting out at Lunenburg, N.S.

**Manila, Sisal, Italian, Hemp, Jute
Cordage and Twines of Every Description**

MADE IN CANADA SINCE 1825.

**Consumers Cordage Company,
Limited.**

Mills: MONTREAL, QUE., and HALIFAX, N.S.

Branches: St. John and Toronto

Agents: Jas. Bisset and Co., Quebec. Tees & Persse, Limited, Winnipeg,
Regina, Saskatoon, Moose Jaw, Calgary, Edmonton.
McGowan & Company, Vancouver.



no matter what the requirements in sheet lead it could be supplied on the shortest notice.

Another session was taken up in reviewing the sales of babbitt metals for 1917, which far exceeded any previous year. Mr. Harris, Jr., gave a very interesting address on this subject, illustrating the real meaning of specific gravity of babbitt metals.

An exhibition of how to pour babbitt metals to give best results was made most instructive.

The question was asked by one of the salesmen, "Why do we guarantee our babbitt metals to give excellent service?" This opened a subject full of discussion, and to illustrate and give a practical demonstration of its manufacture, first, a visit was made to the laboratory where tin, antimony, lead, zinc, copper, etc., were tested by the metallurgical chemist. Then the melting pots were visited where three of the largest were being operated. Each of them have a capacity of 35 tons. One of Imperial Genuine Babbitt Metal for large shipbuilders, one of Harris Heavy Pressure and one of low grade for stock. During the melting process more laboratory tests were made to prove the accuracy of the alloy, and later in the day after the metal was poured, another test was made on the friction testing machine. Comparisons were made showing how in Imperial Genuine the tenacity of the tin and copper mixture combined with ductility renders it best for high speed and special hard service.

At the conclusion of the babbitt metal discussion came one of the most interesting events of the convention, when Mr. Fred Harris, manager of the Winnipeg branch, presented a gold watch and chain to Messrs. D. L. Scott and E. Parkin, who had been successful in the Harris Heavy Pressure competition.

Another session was given over to Ingot Metals, so that salesmen would thoroughly understand what they were selling. Samples of copper ore, zinc ore, lead ore, phosphor tin, antimony, and phosphor copper were thoroughly dealt with.

Metal conditions for 1917 were thoroughly reviewed and prospects for 1918 discussed and the effect the war had upon the metal industry brought out some most interesting details.

Following this came the manufacture of solder of various grades. The salesmen after going minutely into all the points of solder, as to quality, etc., were taken through the factory to see the manufacture of bar solder, slab solder, wiping solder, wire solder and ribbon solder.

Each day lunch was served at the Sunnyside Pavilion and with the exception of this break every day was full of business.

The salesmen were encouraged to give addresses and to illustrate the practical and interesting subjects the following might be noted:

Humanity in Business—E. Parkin.

Contracts—F. Harris.

What we are doing in Winnipeg—W. G. Garrett.

Sales assistance from the office—M. Matthews.

Regular production of business, Co-operation, Trade and its prospects in Nova Scotia and New Brunswick etc.

Then followed a visit to the lead pipe presses and lead pipe of all sizes were made.

One evening was given over to a smoking concert, held in the large showroom at the head office and at which, in addition to the salesmen, the whole office staff and the foremen of the various departments were invited. This was certainly a great success and the

fun was fast and furious, and when the Convention Song was sung it made the rafters ring, and was only second to the hearty way in which the National Anthem brought the concert to a close.

At the conclusion of the convention votes of thanks were given to Mr. W. G. Harris, Sr., Mr. W. G. Harris, Jr., and Mr. H. C. Crow; and Mr. Harris, Sr., in response, stated that even though it meant such a tremendous amount of thought and care to prepare and carry a convention to such a successful issue, it was labor well worth while when every one took such intense interest in it, and he hoped that each one would go away feeling that a greater knowledge of the goods manufactured by the Canada Metal Co., Ltd., had been gained, and that they would feel satisfied that the aim to give service and maintain the reputation for dependability was well backed up by equipment in each department being the best that money and brains could produce.

MEMORANDUM.

Department of Customs, Canada,
Ottawa, 12th March, 1918.

To Collectors of Customs,
War Measures—Privileges to United States Fishing Vessels.

An Order in Council in regard to United States Fishing Vessels was passed on the 8th March, 1918, containing provisions as set forth below.

Customs Officers will be governed accordingly.

G. I. DESBARATS,

Deputy Minister of the Naval Service.

JOHN McDOUGALD,
Commissioner of Customs.

Certified copy of a report of the Committee of the Privy Council, approved by His Excellency the Governor General on the 8th March, 1918.

P.C. 560—Extract.

The Minister of the Naval Service recommends, under the authority of the War Measures Act, Chapter 2, of the Statutes of 1914, that during the war, United States fishing vessels, in addition to their treaty rights and privileges, shall be permitted to enter any port in Canada, without the requirement of a license, or the payment of fees not charged to Canadian fishing vessels, for any of the following purposes:

(a) The purchase of bait, ice, nets, lines, coal, oil, provisions and all other supplies and outfits used by fishing vessels, whether the same are of a like character to those named in this section or not:

(b) Repairing fishing implements;
(c) Dressing and salting their catches on board ship;

(d) The shipping of crews;

(e) The transshipment of their catches;

(f) The sale thereof locally on payment of the duty.

The Minister further recommends that the fees paid on licenses already taken out for the present calendar year be remitted.

The Committee concur in the foregoing recommendations, and submit the same for approval.

Sgd. RODOLPHE BOUDREAU,
Clerk of the Privy Council.

Memorandum.

Department of the Naval Service,
Ottawa, March 13th, 1918.

— LINDE —

REFRIGERATING MACHINERY

Is known and recognized the world over as

The Standard Refrigerating Machine

We have carefully studied Refrigeration under all conditions in Canada for the past 25 years and know what is best in this line. *Special attention given to Fish Freezing and Storing Plants.*

Our Machinery is "Made in Canada"

The Linde Canadian Refrigeration Co., Ltd.

MONTREAL: 37 St. Peter Street

TORONTO, WINNIPEG, CALGARY, EDMONTON, VANCOUVER.

Twenty-five Years' Service to Canadian Users

“SCYTHES SLICKERS” Wet Weather Garments

When buying oilskins, make your selection
from the following grades:

“Lion” Brand

“Swan” Brand

“Sailor” Brand

Oiled Clothing

BEST FOR THE FISHING TRADE

Write us for price list

Scythes & Company Limited

MONTREAL

TORONTO

WINNIPEG

The following is a copy of a notice that was recently sent by the United States Secretary of Commerce to all the Customs Collectors of that country:—

"To promote the vigorous prosecution of the war and to make the utmost use jointly of all the resources of the nations now co-operating you will permit, during the war, Canadian fishing vessels and those of other nations now acting with the United States to enter from and clear for the high seas and the fisheries, disposing of their catch and taking on supplies, stores, etc., under supervision as in the case of merchant vessels entering and clearing for foreign ports, except as to tonnage tax and other charges specifically imposed on entry from and clearance for foreign ports."

G. J. DESBARATS,

Deputy Minister of the Naval Service.

WHITEFISH HATCHERIES FLOURISHING.

The whitefish hatcheries in Manitoba and Saskatchewan are in a prosperous and flourishing condition. After all the interfile eggs have been removed the hatcheries in these Provinces contain over 314,500,000 healthy eggs in splendid condition, practically all of which will hatch under normal conditions, unless some unforeseen accident occurs.

These eggs are distributed as follows:

Lake Winnipeg, Manitoba:—	
Gull Harbour Hatchery	73,000,000
Dauphin River Hatchery	133,500,000
Lake Winnipegosis, Manitoba:—	
Snake Island Hatchery	46,000,000
Fishing Lake, Saskatchewan:—	
Fort Qu'Appelle Hatchery	62,000,000
	314,500,000

BILLINGS-GATE MARKET.

London, February 23rd, 1918.

This week, with few exceptions, supplies have been on the light side, and the keen demand throughout has tended to accentuate the shortage, with the result that prices more or less generally have been perilously near the maximum rates permissible, while some kinds have actually commanded the full schedule figures on the wholesale markets. The arrivals of boats have been well up to the average so far as numbers are concerned, but the individual catches have been rather small, pointing to stress of weather at sea.

Deliveries of herrings have been very erratic, great

difficulty being experienced in securing prompt transport from the far north; unfortunately this has been reflected in the condition of many consignments and has depreciated values. Best quality herrings have been expensive, going as high as £7.10.0 per barrel. Smoked fish—haddocks, bloaters and kippers—have commanded full value, smoked haddocks during the past few days selling on the wholesale markets at the maximum of 2s. per lb. for selected fish.

With meat rationing coming into force in London and the Home Counties next week inquiry for all kinds of fish is expected to be heavy. Any consignments in prime condition which exporters in Canada can get away to this country are assured of a ready sale at good prices.

The Canadian frozen cod, fresh haddocks and flatfish marketed by the Ministry of Food are still selling steadily, the principal London caterers and many of the great local institutions, such as infirmaries, workhouses, hospitals, etc., using increasing quantities.

London, February 16th, 1918.

On the whole this week's trading has been satisfactory; most kinds have been fairly prominent, and demand has been more or less active throughout. Haddocks have provided an exception, so far as quantities are concerned, and with keen competition have regularly made prices in the neighborhood of the maximum on the wholesale markets. Best plaice—that is, well-fed specimens—have been difficult to obtain; most of these fish being thin following spawning. Herring supplies have been insufficient for requirements especially as owing to transport difficulties many consignments have not reached the consuming centres until the condition has greatly deteriorated. This, of course, has depreciated values. Kippers and bloaters still command very high rates. Sprats are rather expensive! The Scotch line fishing season at the Moray Firth ports having opened, some fair consignments have reached Billingsgate, and have met ready buyers round 14s per stone. To-day another consignment of loose trawled fish was received by Mr. Peter Forge, hailing from the Naval Authorities at a prominent East Coast centre; this fish, consisting of cod, whiting, roker and plaice, which were in excellent condition, was very welcome.

Frozen salmon is almost unobtainable, and the same may be said of frozen halibut. The Canadian frozen fish marketed by the Ministry of Food is meeting with an increasing demand. The flatfish especially appear to be much appreciated.

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THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

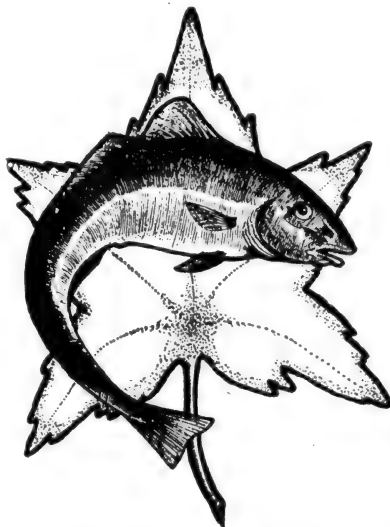
F. WILLIAM WALLACE
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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, APRIL, 1918

No. 4

IMPORTANT EXPRESS DECISION.

The value of the Canadian Fisheries Association to the Fishing Industry is amply typified in a recent decision which has been made by the Board of Railway Commissioners regarding the delivery of fish by express companies at delivery points.

Almost two years ago, the Express Companies sprung a mine under the fish trade by a notification that they would discontinue the cartage delivery of ear load lots of fish. The Canadian Fisheries Association's Transportation Committee immediately appealed to the Railway Commission for a hearing, and the move was suspended until the hearing came off. The Association, through Vice-President Brittain, W. Douglas of Winnipeg, and other officials placed the viewpoint of the Fish Trade before the Board and the Express Company's move was suspended until a ruling was made.

On March 22nd of this year, the following announcement was made from Ottawa:

"The Board of Railway Commissioners has decided against the claim of the Dominion Express Company in regard to express rates on fish. The Dominion Express Company in the past has made deliveries

of fish by cartage to consignees. By supplements to the tariff the company sought to cancel all cartage delivery applying to fish moving in earload lots from the Atlantic to the Pacific.

"The board suspended the supplements with the result that the company was forced to continue delivery of fish as in the past.

"In cancelling delivery the company sought to sustain its action by the claim that the rates from the Pacific to Eastern cities were extremely low, and forced by competition. Further, that it was never intended by the express companies to make cartage deliveries of fish handled in earload lots. In giving judgment against the company, Sir Henry Drayton says: "It must be admitted that the rates are low rates, but they are not competitive rates in the sense that the term is ordinarily used. The competition is a trade competition in selling Western fish on the one hand as against Eastern fish on the other; and in order to get Western fish into Eastern territory, where it can be sold at a reasonable rate, low fish rates from the West are necessary.

"Whilst specific references are made to the Dominion Express Company, other express companies are bound by this judgment."

IMPROVED FISH TRANSPORTATION.

The Transportation Committee of the C. F. A. some two months ago waited upon the Canada Food Board and the Canadian Government Railways to obtain improved express refrigerator car facilities for fish from Atlantic points. Ten refrigerator cars of an improved type and suitable for fast trains were asked for.

We are able to announce that the Canadian Government Railways are having ten cars constructed and some will be ready for service on the I. C. R. in June. Others will be ready during the summer.

A number of refrigerator cars for the express fish trade out of Prince Rupert over the Grand Trunk Pacific have also been ordered.

The Transportation Committee of the Canadian Fisheries Association deserve credit for the manner in which they have secured improved transportation facilities for fish and their work in this direction should be appreciated by the trade.

REPORT OF CANADIAN FOOD BOARD'S FISH COMMITTEE.

Elsewhere in this issue, we publish the report of the Canada Food Board's Fish Committee up to the time Hon. W. J. Hanna resigned as Food Controller. The report covers the Fish Committee's activities between July and December, 1917. Under the supervision of Mr. H. B. Thomson, present chairman of the Food Board, activities in the development of our fisheries have been still more pronounced.

MARKETING PACIFIC FLAT FISH.

A great future is promised for Pacific soles, brills, witches, skate and plaice in the markets of the Western Provinces. The Canada Food Board's efforts to popularize these fish are meeting with success and the demand is steadily growing. The fish are being retailed throughout the West at ten cents per pound, frozen and dressed, or iced and dressed, and as they are really first class, palatable fish, they are commanding a market.

The Rupert trawler "Jas. Carruthers," is now engaged in the fishery, and the B. C. Packers' Association have equipped their steamer "B.C.P." with otter trawl gear and will supply the markets. Undoubtedly the Canadian Fishing Company and other firms will follow suit.

The importance of finding a market for these Pacific fish cannot be over-estimated. The end of the halibut fishing is in sight and the utilization of other edible Pacific fish is imperative if vessels and plants are to be maintained in the future.

HALIBUT HANDLERS MEET FOOD BOARDS.

Leading American and Canadian producers and distributors of halibut met at Chicago on March 21st, to confer with Kenneth Fowler of the U. S. Food Administration and F. W. Wallace of the Canada Food Board, on regulating the prices for halibut through all channels.

Canadians present were A. L. Hager, Vancouver; T. H. Johnson, Prince Rupert; C. P. Rhodes, Calgary; W. Douglas, Winnipeg; D. J. Byrne, Montreal; and J. J. Harpell, representing Canadian Fisheries Association.

Up to the time of going to press, no decision has yet been made by the Food Boards as to any regulations. The temporary regulations drafted at Seattle on March 4th remain in effect until a final decision is announced.

MANITOBA BRANCH CANADIAN FISHERIES ASSOCIATION.

The latest addition to the Canadian Fisheries Association is the Manitoba Branch which was organized in Winnipeg on April 8, 1918. The members include the distributors and fishermen of Lakes Winnipeg, Manitoba and Winnipegosis. A report of the first meeting is published elsewhere in this issue. The new branch is heartily welcomed by the parent organization and undoubtedly the branch will become of great benefit to those engaged in the Manitoba fishing industry.

THE C. F. A. CONVENTION.

The importance of the Canadian Fisheries Associations' Annual Convention to be held in Halifax on August 6th, 7th and 8th, cannot be too highly appreciated by the fishing industry.

The Executive are preparing to make the Convention one of the most interesting gatherings ever held by those engaged in the Canadian fisheries, and the questions to be discussed will form the basis for future policies.

Make your preparations now to attend and bring your lady folks with you. The Convention will be both a vacation and a duty to the business you are engaged in.

THE DEEP-SEA FISHERMAN'S UNION.

Under the caption of "High Prices for Pacific Fish", there appeared in the January issue of the "Canadian Fisherman", an editorial which read in part as follows:

"During November, 17½ cents per pound was paid to the fishermen for halibut on the dock at Prince Rupert, and advices to hand from the Coast state that the Deep Sea Fishermen's Union have increased their prices on company boats to three cents per pound for halibut the year round, two cents for black cod, and a cent and a quarter for other varieties. On halibut, this is an increase of 33 1-3 per cent.

"When one considers that the majority of the halibut fishermen on the Pacific Coast are aliens of Scandinavian extraction who merely do the actual fishing and look after

their gear, and who neither pay for the bait, ice, gear, fuel, or food used on the company vessels, nor even give a hand in the handling of the ship—which in most cases carries a sailing crew—we are of the opinion that the increase is absolutely unwarranted.

"Halibut fishermen on the Pacific have been earning from \$200 to \$400 per month — sometimes more than that, and seldom less than the minimum. Their Union is a strong one — so strong that the producers simply have to knuckle under to its demands or face the inevitable strike. No strike-breakers can be imported to buck them and they have things very much their own way."

On February 25th we received from Mr. R. Kearley, agent, of the Vancouver Branch of the Deep Sea Fisherman's Union of the Pacific, a bitterly worded protest giving an abundance of abuse and accusation but no proof that our statement was inaccurate.

To this letter he replied as follows:

"Your letter to the Editor of the Canadian Fisherman and accompanying clippings have been referred to the writer.

"Captain Wallace, the Editor of the Canadian Fisherman, has been absent from the office a great deal. Early last year he was taken by the British Navy to do some special work and latterly he has been giving a great deal of attention to the work of the Food Controller. In the meantime, his assistants have had more to do with the bringing-out of the Canadian Fisherman than they would have if he was on the job all the time himself.

"The Fisherman does not exist for the purpose of serving any group or section of the industry. Its sole object of existence is to promote the best interest of the whole industry, and while we have charge of it, everything will be done to maintain this policy without any qualifications whatever. If our editors, through inadvertence or otherwise, have made a statement not in accordance with the facts they must correct same and explain why the mistake was made just as soon as they know all the facts regarding it.

"Will you, therefore, be good enough to submit to me personally all the facts regarding the prices and wages paid to the fishermen on the Pacific Coast? In addition to the prices for fish and wages paid to the deep-sea fishermen who sail on boats owned by others, I would ask you to give me also the price which the fishermen would receive for their catch on wharf at Prince Rupert, Vancouver, and Seattle, providing they went out in their own boats, caught the fish themselves and sold them at the above-mentioned ports."

As we go to press the following reply from Mr. Kearley has come to hand:

Dear Sir,—Your letter of February 25th to hand, and owing to my absence from the city for a short time, I have been unable to answer it before. You stated that my letter and clippings had been referred to the writer, and I notice that's about all that will become of it. I understand that there was also a letter sent from our headquarters which likely will also be referred to the writer. "Of course, I quite understand that the 'Fisherman' as you state does not exist for the purpose of serving any group or section of the industry, as is shown in your issue of January, where you pay such compliments to the fishermen of the Pacific. I quite understand that the existence is to promote the best interest of those it represents. However, I don't think it necessary to give you facts regarding the prices and conditions prevailing in the fish business on this coast, as it may upset the views of the writer of the article in question, or perhaps encourage him to go into the fish business after learning so much about it. However, since you did not rise to the occasion of correcting such fairy story as was in your January number regarding the fishermen on this coast, I think it would be foolish for me to give you any facts in this connection, as it might cause the writer to have another nightmare.

Yours very truly,

RUSSELL KEARLEY,
Agent.

Elsewhere in this issue we published a letter received from Mr. P. B. Gill, of Seattle, Secretary of Deep Sea Fisherman's Union of the Pacific. Mr. Gill's letter is

and approaches the matter in a manner calculated to put in its proper light by printing out the facts. Mr. Kearley's attitude is impossible.

In our January issue we depreciated the constantly increasing demands of the Fisherman's Union, which, in our judgment, was mainly responsible for the higher prices of halibut and salmon. The prices paid to the producers of halibut have been as high as 17½ cents. The net increase in the demands of the fishermen have been as high as 33 1-3 cents within the space of one year.

In small centres, where the demand is not great and the quantity sold is small, or where the service is exceptional the price paid by the consumer has been as high as 30 and in some few cases 35 cents a pound. But in the larger markets the consumer has been able to get halibut at from 23 to 28 cents a pound. These prices cannot be considered high considering the prices at the coast.

A PROTEST FROM THE DEEP-SEA FISHERMAN'S UNION OF THE PACIFIC

Seattle, Washington, February 25, 1918.

Canadian Fisherman, Montreal, Canada.

In your January issue, there appears an article "High Prices for Pacific Fish." The author shows gross ignorance of the subject matter, particularly as to halibut. The fact is that the average price paid to the independent fishermen, for halibut, during the year 1917 was less than eleven cents. The high prices quoted were for first class fish only. Second class fish which at times means half the cargo, is sold for half the price paid for the first class fish. The men fishing for the companies received in 1917 the sum of 2 cents per pound for halibut during nine months of the year. In the other three months they received 2½ cents per pound. They asked for and received for the year 1918 the sum of three cents per pound. This was known to the Canadian Government, and no objection was raised by them. For other kinds of fish, such as Red Cod, Ling Cod, Gray Cod and Flounders, the men fishing for companies receive 1¼ cents per pound and when Otter Trawling, 1 cent per pound. The independent fishermen, men that share with the vessels, agreed with the two Governments to deliver the last named varieties of fish mentioned for 4 cents per pound in the United States and for three cents per pound in Canada. This was done to assist the Governments to place a cheap fish food on the market, and if it has not been successful, the people to blame, must be the retailers. These prices were agreed upon by all parties concerned and the best of feeling existed in the conferences, and it is with great surprise that drastic remedies are to be applied to us by the two Governments and it is with great sorrow that we find that we are classed as Money Hogs, and put in the same class as a number of manufacturers and food purveyors, who are now being put on the griddle by the Governments, particularly so, when we were complimented by the Canadian representative of the Food Controller's Office, having the fish question in hand, for being of the greatest assistance to him in getting the Government in a position, where they can put a food product on the market that will be within the reach of all. I respectfully request,

that you will give this letter a space in your publication, so that it may offset the wrong impression that must have been brought out by the article in the January issue.

I remain, very respectfully yours,
P. B. GILL,
Secretary.

RE EMPTY COLD STORAGE SPACE.

Office of the Food Controller,
Ottawa,
March 26th, 1918.

To the Secretary of Canadian Fisheries' Association:

Dear Sir,—We have been advised by Mr. Angus R. McDougall, that there is a vacant cold storage building with 2,400 square feet space located at Port Hood, N.S., which was built about 1910 by J. A. McDonnell. It is the desire of the Canada Food Board to assist the fishing trade wherever possible, and we believe that some member of your organization should take advantage of this cold storage building.

Mr. McDougall says there is no other cold storage in operation for many miles distance, although one is much needed for the conservation of food in that neighborhood in connection with the fishing operations.

Yours very truly,
Canada Food Board,
E. O. SAWYER, Jr.,
Fish Section.

SUMMARY OF FISHING RESULTS FOR THE YEAR 1917.

From the detailed returns now in the Department it is evident that the marketed value of our fisheries for the year 1917 will be well over \$50,000,000, exceeding the record established in the preceding year by more than \$12,000,000.

The chief contributors to this large increase were British Columbia, with almost \$8,000,000 more, and Nova Scotia, with over \$4,000,000 more.

The price of all kinds of fish has been higher, but the greatly increased value is not due altogether to that circumstance, for there has been a greater quantity produced in most of the provinces.

Much is being said and written in these days with a view to increasing the production of food stuffs, but in so speaking and writing it should not be forgotten that the fishing industry is somewhat different from that of other food producing industries in that operation are affected not only by weather conditions, but by the erratic movement of the schools of fish. It is not always the case that the employment of a greater number of men and boats results in a greater production of fish, especially with our present means of capture.

For example the Lunenburg bank fishing fleet of 1917 was the smallest in the past ten years, with the exception of one year, yet, the catch was the largest on record. On the other hand the output of the sardine and large herring fishery in the Bay of Fundy fell far short of that of the preceding year, notwithstanding the operation of fully as much fishing gear and great preparation for dealing with the catch.

In Nova Scotia there was a considerable increase in the landings of cod, haddock, hake and mackerel. A very marked increase is noted in the quantity of had-

dock taken by means of traps, at Ingonish. In the western part of the Province there was an increase in the catch of cod and mackerel, but a decrease in that of haddock and herring.

In New Brunswick the chief feature to be noted is a considerable drop in the sardine and large herring catch in the Bay of Fundy; but with higher prices, the value of the fisheries in that section increased about \$300,000.

In the northern section of the province there was a decrease in the catch of cod and herring; the value, however, is greater by about \$150,000.

In Prince Edward Island there is an increased catch of cod and higher prices.

In Quebec the cod catch was greater, but the salmon, mackerel and herring was rather less. The total value is, of course, greater owing mainly to higher prices.

In Ontario there is an increased value of over \$200,000. The catch of lake herring was about 80,000 cwts. greater than last year, but that of whitefish and trout was somewhat less, while the blue pickerel catch was much less.

In the prairie provinces the output and value have increased.

In British Columbia the usual big run of sockeye salmon in the Fraser river district, which was due in 1917, did not materialize, and the pack of that particular grade of salmon on the Fraser was not more than 25 per cent. of an ordinary big year. This serious decrease was evidently due to the obstruction of the river during the run four years ago, caused by blasting operations on the C. N. R. near Hellsgate.

Notwithstanding this failure, however, the total pack of salmon in the province was the largest on record. Other grades were packed in greater quantities to take the place of sockeye, especially in the northern and outlying parts of the province.

The fresh fish trade of this province has increased greatly in volume in recent years, with the additional transportation facilities now available. Keen competition for the fishermen's catches has thus been engendered between that trade and the canning industry, with the result that high prices were paid for all species of salmon.

More attention is being given from year to year to the canning and curing of herring in British Columbia. Many thousands of cases of these fish were canned, and it is estimated that during the winter season just closed about twenty-five thousand barrels were cured in what is known as the Scotch method.

In view of the great demand for all kinds of Canadian fish in Great Britain, the United States and at home, and the preparations that are being made for a vigorous prosecution of the fisheries on river, lake and ocean during the year 1918, we may confidently look for another great increase in the value of our fisheries.

PERSONALS.

Major Hugh A. Greene has returned to Montreal after a visit to his home in Prince Albert, Sask.

Mr. T. H. Johnson, of the Canadian Fish and Cold Storage Company, has returned to Prince Rupert after a visit to Chicago, Toronto, Montreal and eastern cities.

Steam Trawling off the Nova Scotia Coast in Winter

"If most of the people who eat fish, especially in winter time, had to catch them," remarked Gjert Myhre, captain of the steam trawler 'Triumph,' the word would soon disappear from menu cards."

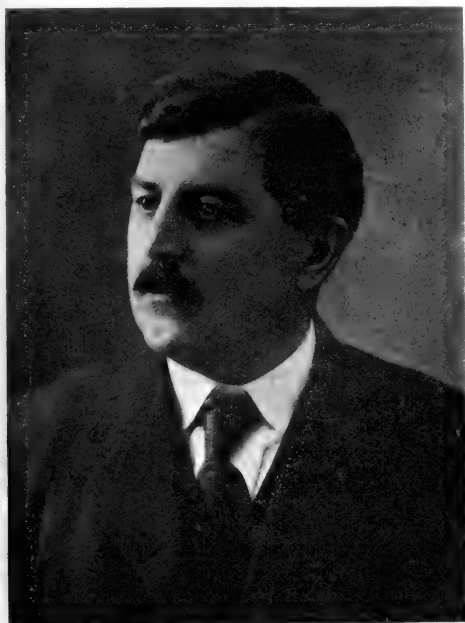
The captain had just made his ship fast to her wharf in Halifax one of those zero days recently so usual in Nova Scotia. The "Triumph," coated with gleaming ice from the tip of her masts to the water line, suggested a Viking Ship. The trawler's captain and crew—descendants of the Norsemen every one—had indeed returned from a grim battle, not with their fellow-men, but with all the genii of the ocean.

Winter fishing on the Grand Banks means long hours of hard work and under about the most difficult conditions one can conceive. The "Triumph" leaves Halifax the minute her cargo is landed. Only the fish-

out sleep. Thinking of stowing away fish in a zero temperature, a sleet storm, and a thirty mile gale! If the sea is rough, it is not unusual to have a whole deckload washed away and a long night's work gone for nothing. Often, too, the trawl comes up empty.

In very cold weather the trawl freezes stiff the moment it comes above water. The lower temperature of the air, as compared with the water, kills the fish almost instantly. With good luck the men make a fair wage, but working under such conditions, often with clothing wet through, fishermen are peculiarly liable to rheumatic diseases. A trawler fisherman is an old man at forty. Every one of the "Triumph" crew of twenty is under thirty-five.

Another danger to which winter trawlers are exposed is that of icing-up. The steel hull is frequently



ARTHUR BOUTILIER.

President, National Fish Co., Ltd., Halifax, N.S.,
owner s.s. Triumph.



CAPT. GJERT MYHRE,
s.s. Triumph.

erman's most treacherous foe, foggy weather, can deter Capt. Myhre from setting out.

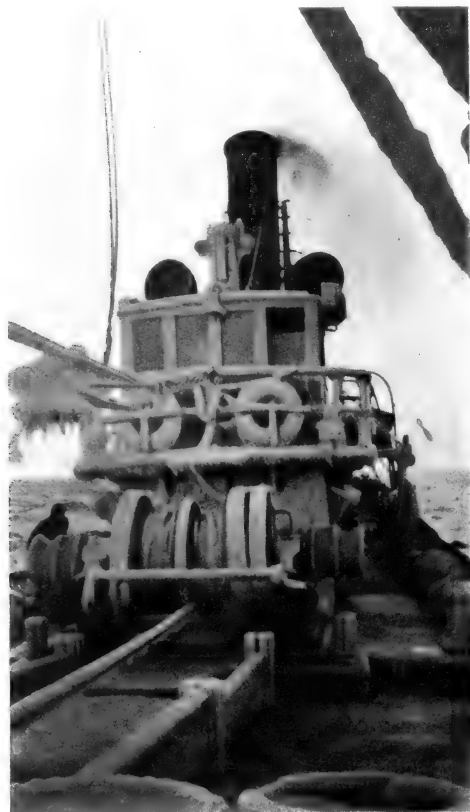
There is no telling beforehand just where fish will be found, but the fishing grounds from December to April are the Western Banks around Sable Island. When the steamer reaches a point some hundred and twenty-five miles off the Nova Scotia coast, and almost directly east of Halifax, the trawl is let out. The depth here is one hundred to one hundred and fifty fathoms. It doesn't make any difference whether it is day or night; almost calm or a driving gale. The "Triumph" is fitted with electric lights and the crew often are obliged to work fifty to seventy hours with-

so heavily coated with ice as to give the ship a dangerous list and if she should happen to encounter a storm while in this condition, the "Triumph" would never make Halifax again.

It is not always fish the trawl brings up from the depths of the Western Banks. Sometimes there are bits of wrecked ships or, again, a slime covered skull—silent messenger from the unknown past—rolls to the icy deck.

Only three steam trawlers fish out of Halifax. The "Triumph," purchased by Arthur Boutilier from English parties in 1916, was the first ship to engage in the business from that port. She has a carrying

capacity of 300,000 pounds and, in favorable conditions, frequently brings in a full cargo, mostly had-dock, but also halibut, cod and a small quantity of flat fish. The "Triumph" makes trips like a train on schedule time and her catch finds its way to family tables all the way from Nova Scotia to Vancouver. The fish are shipped fresh or cured and this ship, directly and indirectly, gives employment to upwards of a hundred men, thus in every respect has more than fulfilled her present owner's most optimistic hopes.



Steamship "Triumph" making for Halifax in winter
—Note ice-coated shrouds and decks.

Captain Gjert Myhre commanded steam trawlers out of Grimsby, the famous English fishing port, in the days before the war. He has fished in the White Sea, around Iceland and on the Western Banks for years. As many generations of Myhres as can be counted, almost, have been sailors who went down to the sea from Norway, which, probably, accounts for the safe trips the Halifax boat has made through all the dangers of hurricane and storm that beset fishermen on the Western Atlantic.

Mr. A. L. Sherman, of the Defiance Packing Company, Vancouver, B. C., has been visiting Ottawa, Montreal and eastern cities.

FLAT FISH SUPPLIES.

Arrangements have been made by the Fish Section of the Canada Food Board in conjunction with firms producing sea fish on the Atlantic Coast to supply flat fish—flounders, soles, witches, skate, etc., at a price f.o.b. the coast, which would cost the retailer in Ontario and Quebec approximately 7c. a pound which allowing a spread of 3c. per pound for the retailer can be purchased by the consumer at 10c. per pound. These excellent sea fish are highly esteemed in England and on the continent and should be taken advantage of in Canada.

Your retail fish dealer can secure shipments of these fish from the following firms:

Maritime Fish Corporation, Ltd., Montreal.

Leonard Fisheries, Limited, Montreal.

W. R. Spooner, 119 Youville Square, Montreal.

D. Hatton Company, Montreal.

White & Company, Toronto.

F. T. James & Company, Toronto.

The Board has made similar arrangements for the marketing of flat fish throughout the Western Provinces and the distribution of these splendid food fish is now being completed to cover Canada from Coast to Coast at the uniform price of 10c. per pound to the consumer.

LOBSTER HATCHERIES CLOSED.

Honorable Mr. Ballantyne, Minister of the Naval Service, announces that he has decided to permanently close the fourteen lobster hatcheries scattered about the coasts of the Maritime Provinces.

The wisdom of lobster hatching has been a subject of investigation by Doctor A. P. Knight, of Queen's University, in his capacity as a member of the Biological Board, for four years past. He has found that lobster hatching is wrong in principle, and that instead of building up, under the conditions that they must be operated along our coasts, they are really destructive.

Unlike fish, the eggs of the lobster are fertilized when they are extruded, and the mother lobster retains them attached to her body until they are hatched out. If, therefore, the mother lobster is left in the sea she will hatch every hatchable egg, and under natural conditions, so that even under the most favorable conditions a hatchery could not compare with her in efficiency. But the hatcheries could not be operated under anything like ideal conditions. As the fishery is scattered all along the coast, arrangements had to be made with the fishermen to bring their berried lobsters to the canneries they were fishing for. The lobsters were held in crates there until the collecting boat from the hatchery would come along, when the eggs were scraped off, and taken to the hatchery and the mother lobster was then handed over to the cannery. If left to hatch naturally, she would also have a chance of producing another crop of eggs.

The Department of the Naval Service is arranging to start an educational campaign amongst the fishermen to induce them to protect all berried lobsters and to co-operate with the Department in protecting the fishery, and thus save the industry for them. Doctor Knight is being placed in charge of this campaign. He will have five or six undergraduates from Maritime Universities assisting him.

Ottawa, April 6th, 1918.

Report of the Canada Food Board's Fish Committee for 1917

(Owing to the importance of the fish question and the great difficulties encountered in arriving at a solution of all the various problems involved, from the Atlantic to the Pacific, I have had this memorandum written at unusual length in order that the subject might be more fully understood.—W. J. H. Hanna.)

Since fish food is by far the most important available substitute for beef and bacon, the greater production of fish is a prerequisite to the maximum export of beef and bacon. The supplies of mutton, veal, poultry, eggs, etc., are limited. The limit of fish production has not been even approximately reached.

Though endowed with magnificent fishery resources Canada is far behind other nations in the development of her fisheries. Out of a population of 8,000,000 people, only 95,000 are engaged in the fishing industry. Nor are all of these constantly employed; with many of them fishing is but a desultory and seasonal occupation.

The salmon fisheries of the Pacific, the fisheries of the Great Lakes, those of the Gulf of St. Lawrence, and the cod fisheries of the Atlantic Banks, are operative only during the summer months. Those of the northern lakes of the prairie provinces are conducted only during the winter, as snow is essential to the transportation of the catch to the nearest railway line.

The methods employed, notably on the Atlantic shore and off-shore banks, are crude and primitive. Lack of adequate transportation facilities to points adjacent to prolific fishing grounds militates against supplying the Canadian market regularly with fresh fish. Fish caught in these remote areas must be preserved by means of salt, and the product reaches the market as dried, salted, or pickled fish. Of these the Canadian consumer takes but a small proportion, the bulk being exported to Europe, the West Indies, and South America. Roughly, 120,000,000 pounds of such fish find a market abroad. Salmon and lobsters caught in the areas distant from railways have to be canned. Though a great proportion of the world's supply of canned salmon and lobsters is produced in Canada, the waste is tremendous.

The supply of fresh fish from the Atlantic and Pacific must come through the ports served by adequate transportation facilities. As the greatest consuming market is included in the area between Quebec City and Winnipeg, with long stretches of sparsely settled territory between, the rail hauls of from 800 to 2,000 miles add to the difficulties of marketing sea-fish in a fresh condition. Express service has had to be used to the maximum in order to get fish to the consumer in prime condition. As heat is maintained in express cars for at least seven months in the year, fish packed in ice suffers considerable deterioration in transit. Freight service in winter is used to a considerable extent; but transit by this means is slow, and sudden thaws cause losses and deterioration.

Though Canada is a large fish producing country, previous to July, 1917, it never featured as a large consumer. The Canadian public has been apathetic with regard to fish as a food. The retail trade remains even to-day, largely in the hands of butchers and

grocers who carry fish as a side-line. The care of fish in most of the retail stores has received but scant attention, and the public has been repelled by the unsanitary methods of handling and displaying. For this and other reasons the ready market and good price offered in the United States draw the bulk of our fresh fish.

Scattered over an area 4,000 miles wide, Canada's fish industry represents a huge unorganized activity where striking variations are met with in every 10° of longitude traversed. No particular fishery is conducted along lines similar to others. Conditions and methods vary in almost every instance. The only efforts made to standardize and organize the industry are attributable to the Canadian Fisheries Association, which was formed in the year 1915.

When the Fish Committee of the Food Controller's Office was appointed, it was entrusted with the task of increasing fish consumption throughout the Dominion. The members took office in July, 1917, and set to work to acquaint themselves with existing conditions.

The first condition requiring remedy was the notable lack of transportation facilities in marketing Atlantic fish. The Committee, after many negotiations, was successful in having a fast freight train placed in service on the Canadian Government Railways. This started from Mulgrave, N.S., picking up fish there from Canso, Hawkesbury and Cape Breton points, and collecting further shipments at Truro, N.S. The train, known as the Sea Food Special, runs whenever shipments can be collected, making the trip from Mulgrave to Montreal in forty-eight hours. Shipments for Ontario points are carried to Toronto and there distributed.

The problem of better retail handling was next taken up. It was found that the lack of proper refrigeration and display kept the public from buying more fish. The Fish Committee experimented with the Fish Display Case designed by the Marine and Fisheries Department, and decided to supply these cases to butchers and the smaller retailers of fish at half the cost—the Government bearing the other half—ten dollars. In this way 300 cases were distributed to butchers and fish dealers throughout the cities and towns east of Winnipeg.

Ignorance of the proper methods of preparation and cooking on the part of the housewife constituted another problem. The Fish Committee, therefore, compiled a Cook Book containing simple recipes and advocating the introduction of fish not commonly used, but in themselves most desirable and easily obtainable. 100,000 copies of this book in English, and 50,000 in French, were printed and distributed throughout Canada.

A comprehensive advertising campaign throughout the Province of Quebec so stimulated the use of fish as very materially to increase the per capita consumption. The Union of Canadian Municipalities gave the Fish Committee very material assistance in every province. The result has been a very widespread movement in the substitution of fish for beef and bacon.

In the course of further work the Fish Committee arranged conferences of both Canadian and United States lake fish dealers. After sifting down the evidence it was decided to fix the maximum scale of prices to be paid the fisherman at various lakes for the different species of fish and also to fix the profits of wholesale handlers. Under the scale fixed the Canadian market is to receive primary consideration, and the highest priced fish — whitefish and trout — cannot be retailed for more than 16c per pound. Previously these fish retailed at from 18c. to 22c per pound.

This particular problem involved a large amount of work. It called for expert technical knowledge of the fisheries, and determination of the costs of operations, of transportation charges, of railway shipping charges, and of freight charges from shipping point to markets, and a fair graduation of prices to the fisherman on the various scattered lakes, in order to avoid discrimination. In this work the Committee secured the co-operation of the United States Food Administration.

To enforce the regulations made, and to provide for the prompt punishment of infractions, it became necessary to deal with the licensing of all wholesale handlers of fish. Such a system, therefore, was established. By this means it is practicable to regulate exports, maintain supplies for the whole market, control profits, prevent hoarding and waste, discourage speculators, and to administer the industry sanely and efficiently.

Orders-in-Council were passed requiring all wholesale dealers in fish to register and secure licenses. They were required, amongst other things, to submit monthly sworn statements of the quantities of fish bought and sold and on hand, and the price, high and low, of each particular species.

To defray the expenses of the License Bureau, a nominal fee is charged — \$10 for every \$100,000 of sales up to and aggregating \$500,000, and \$5 for each \$100,000 over that amount. A fee of \$5 is charged for each branch of all wholesale houses. The fees were fixed at a low figure in order that the industry should not be penalized. Since the license regulations went into effect on January 1st, 1918, the wholesalers have cheerfully conformed to the regulations. Under the regulations the license number must be stamped on every box or barrel of fish shipped; and exports by non-licensed dealers can be stopped by the customs authorities at any time.

The Fish Committee of the Food Controller's Office has been able in many ways constructively to assist the fishing industry. For instance, in the month of September, 1917, an unforeseen shortage of gasoline threatened to tie-up the shore fishery of the Maritime Provinces. Through the efforts of the Committee, a trainload of gasoline tank cars was rushed to the coast and a serious stoppage was averted. Similar action was taken in the case of a shortage of gasoline at Prince Rupert, B.C. Both of these instances might have meant a serious diminution of the fish supply.

The Committee was also instrumental, with the aid of the Deputy Minister of Naval Service, in securing the release of the steam trawler "Baleine" from Admiralty Service for service in the Atlantic coast fisheries. The addition of this trawler to the Canadian Fishing Fleet means an increase of some 300,000 pounds of fish monthly.

Fishing restrictions have been raised, and the limit

of time and catch extended, in the lakes of British Columbia, Alberta, Saskatchewan and Manitoba, through the representations of the Committee to the Department of Marine and Fisheries. Hundreds of enquirers have been put in touch with supplies of fish, many retailers have been started in business, and others have been induced to enlarge existing businesses, through the activities of the Committee.

Transportation of fish has been greatly facilitated and any condition tending to hinder the movement or production of fish has been promptly corrected.

The Committee succeeded in securing prompt supplies of coal for large fish plants in Nova Scotia which otherwise would have had to close down, and a complete suspension of fishing operations was prevented. Coal was also procured to bunker a Canadian steam trawler, which otherwise would have been idle for a considerable period.

The Fish Committee is in constant touch with every phase of the industry. Shortage of bait for the fishermen has been relieved; coal, gasoline, gear, salt, and other necessary supplies for the fishermen have been procured. Transportation facilities and larger home markets have been developed—primarily, to release beef and bacon for export overseas, or, secondarily, with the object of erecting the Canadian Fishing Industry into a strong organic entity.

The following figures, received from a few of the wholesale and retail Canadian fish merchants testify to the effectiveness of the Committee's work:

No. 1—Retail Stores.

October, November, December, 1916, Fish Sales	\$ 17,720.00
October, November, December, 1917, Fish Sales	21,040.00

No. 2.

October, November, December, 1916, Lake Fish Sales	32,047 lbs.
October, November, December, 1917, Lake Sales	74,898 "
October, November, December, 1916, sea Fish Sales	107,139 "
October, November, December, 1917, Sea Fish Sales	155,310 "

No. 3.

October, November, December, 1916, had-dies and herring	25,338 lbs.
October, November, December, 1917, had-dies and herring	38,182 "

No. 4—Wholesalers.

October, November, December, 1916, Fish Sales	119,812 lbs.
October, November, December, 1917, Fish sales	135,537 "

No. 5—Wholesalers.

October, November, December, 1916, Fish Sales	935,714 lbs.
October, November, December, 1917, Fish Sales	1,207,145 "

No. 6—Wholesalers.

	1916 lbs.	1917 lbs.
July to Dec., Fish Sales, Quebec . . .	588,473	932,688
July to Dec., Fish Sales, Ontario . .	218,070	788,557
July to Dec., Fish Sales, Manitoba, Saskatchewan, Alberta and British Columbia	306,135	505,955
Total Fish Sales	1,112,678	2,227,200

No. 7.—Wholesalers.

July to December, 1916, Fish Sales . . . 4,865,997 lbs.
 July to December, 1917, Fish Sales . . . 8,972,642 “

A Toronto wholesaler states that the increase is 80 per cent.

In conclusion, reference to a matter vitally affecting the fishing industry as a whole must not be omitted.

The effect of special political interests, local and otherwise, has been most disastrous. A sweeping revision of existing laws, both restriction and permission, is patently necessary.

An entirely new survey should be made of Canada's fishery resources, and regulation formed to encourage the maximum of production and development with due regard to necessary conservation, to arrest depletion. The present laws are in many cases inadequate and should be entirely revised.

The lobster fisheries will be utterly exhausted in from 10 to 15 years unless the ever-relaxing regulations be replaced by stringent measures of conservation. All lobster fisheries and all export trade in lobsters should either be restricted to the large (9 inches and over) crustaceans, or better, prohibited entirely for a given period, and the fishermen turned to other productive fisheries.

If the restrictions that now prevent the seining of pollock were removed wholly or in part, the annual catch of Atlantic fish would be largely augmented.

Particular attention should be paid to the herring fisheries of both the Pacific and the Atlantic. The curing and packing of herring in Canada should be brought to a high standard in order that Canadian herring may compete equally with the high class herring of Great Britain and Scandinavia in the world's markets.

Technical education for our fishermen is a crying necessity. Though exploiting a fishery unrivalled for variety of edible species and inexhaustible supply, our fishermen are extremely deficient in training absolutely essential to the successful prosecution of their calling and far behind the fishermen of Great Britain, Scandinavia and Japan.

Utilization of fish waste should receive immediate attention. Fertilizers, cattle and poultry feed, oils of various kinds, can be manufactured from the unmarketable fish and fish offal at present thrown away to the extent of thousands of tons annually.

Localities adjacent to prolific fishing grounds should be equipped with material necessary for the encouragement of local fisheries. Break-waters and harbors should be provided for fishing craft, with aids to navigation to assist their ingress and egress; bait freezers and small cold storages erected under subsidy; tanks to take care of fish offal.

Instances could be multiplied. It must suffice to state that not only are there numerous abuses to be corrected, but there is a crying need of constructive regulation.

Particular attention is called to the conditions which exist on the Pacific Coast. Both demand serious international consideration and regulation.

In the Fraser river, in respect of the salmon which find it their natural home-coming fresh water, the loss represented last year was from six to eight million dollars in fish intercepted by American fishermen, creating a situation which means early abandonment of that river by both Canadian and American fishermen, or an international agreement for a period of en-

tire cessation of fishing and uniform regulation of fishing operations thereafter. This is imperative.

In the north, as reference to the reports of Mr. J. P. Babcock, the Deputy Commissioner of Fisheries for British Columbia and the acknowledged chief authority on the fishery industry on the Pacific Coast, will show, the depletion of the halibut beds has proceeded to an extent which means extinction of the industry. If conjoint efforts are not taken to conserve the halibut this important food fish will soon disappear from the market. The problem must be dealt with internationally in regard to a large area in the waters contiguous to the northern British Columbia Coast and Alaska.

NOTES ON THE SEA FISHING RESULTS FOR MARCH.

The total value of the sea fish in first hands landed during March was \$671,700 against \$686,650 for March, last year.

The month was an extremely stormy one, and fishing in small boats was most difficult. The quantity of lobsters taken was therefore 4,500 cwts. less and their value \$76,000 less than in the same month last year.

It is gratifying to find, however, in spite of the stormy weather that the quantity of cod and haddock landed on the Atlantic coast is 25% greater than in the previous March. This is due to the work of the four steam trawlers now operating from Nova Scotia.

The current lobster season opened on the 15th of November, last. Up to the end of the month of March, the total pack was 3,216 cases while 8,133 cwts. were shipped fresh in shell to market.

During the corresponding period, in the previous year, the pack was 5,759 cases, while 17,552 cwts. were shipped in shell.

ONTARIO FALLS BEHIND ON FISH CATCH.

Canada's Total for Year is \$39,208,378, Increase of \$3,347,670.

Canada's production of fish for the last fiscal year, according to the annual report of the fisheries branch of the Department of Marine and Fisheries just issued was valued at \$39,208,378, an increase of \$3,347,670 as compared with the previous year.

There was an increase in the value of the catch in all the provinces with the exception of Ontario, where smaller catches of trout, white fish, pike and pickerel resulted in a decrease of over \$500,000.

As usual salmon heads the list in value with a total of \$10,882,431.

DISTRIBUTING CALENDARS.

The Consumers Cordage Co., Limited, Montreal, are distributing to buyers of Cordage some very neat Calendars, starting April 1st, 1918, to April 1st, 1919. Any Cordage user can obtain one by writing to their head office, Montreal, or branches.

Mr. A. L. Hager, of the Canadian Fishing Co., Vancouver, is at present in the East.

The Sea Fisheries of Europe

I.— The British Fisheries

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(1) Their Magnitude and Value.

It is intended in the series of articles of which this is the first, to give a brief account of the sea fisheries of the principal maritime countries of Europe, to describe their nature, extent and value, and to point out the chief factors which have led to their development in recent years. The conditions arising from the war, partly connected with fishing operations in European waters, and more particularly in relation to the general food shortage throughout the world, have brought the sea fisheries into greater prominence than ever before. The profound disturbance of trade and the dislocation of markets have raised new problems for the future to solve. When peace comes, and the reconstruction so much talked about, the fishing industry and the fish trade will not simply slip into the old grooves, and be as they were. There will be changes in various directions affecting the fish supply, and one may note already a quickening of thought on many subjects connected with it. It may be of some use at this time to understand how the European fisheries are conducted and how the fish are disposed of.

We naturally begin with the fisheries of the United Kingdom, not only because they are those of the Homeland, but because they are by far the most valuable in Europe, if not indeed the most valuable in the world. In describing them it is necessary to go to the year which preceded the outbreak of war, for since the war began the greater part of the effective fishing fleet and the crews who man them have been engaged in the naval service, and the dwindled fleet which remains to carry on fishing is restricted to certain areas. In this article an account will be given of the yield of the sea fisheries generally, of the extent of fishing operations, the disposal of the fish and other general features. In the next and succeeding articles the development of the fisheries will be traced and the chief methods of fishing described.

The Yield of the Fisheries.

The predominance of the British fisheries amongst those of northern and north-western Europe is well brought out in the *Bulletin Statistique*, published at Copenhagen last year by the International Council for the Exploration of the Sea. The figures refer to the year 1912,* and are as follows:

	Quantity	Percent-	Value	Percent-
	1,000 cwts. age.		£1,000	age.
Great Britain . . .	24,073	43.28	13,234	47.09
Norway	16,019	28.80	3,096	11.02
France	3,437	6.18	4,794	17.06
Germany	3,293	5.92	2,012	7.16
Sweden	2,373	4.27	812	2.89
Holland	2,302	4.14	1,915	6.81
Iceland	1,708	3.07	417	1.48
Denmark	1,213	2.19	948	3.37
Russia	445	0.80	331	1.18
Faroës	295	0.53	136	0.48
Belgium	258	0.46	239	0.85
Finland	208	0.37	170	0.60
	55,629		28,104	

The figures for France are exclusive of the Mediterranean fisheries. It will be seen that of a total yield of 55,629,000 cwts. (or 2,781,450 tons), the British share was 43.28 per cent., and the British share of the total value of £28,104,000 was 47.09 per cent. The quantity and value of the fish landed on the coasts of the United Kingdom in 1913 were still greater, as the following figures show, the percentage for each of the three countries being also indicated to the nearest whole number:—

	Quantity of "Wet" Fish, Cwts.	%	Value £	Value including Shellfish £	%
England & Wales	16,152,374	65	10,009,326	10,336,689	70
Scotland	7,828,350	32	3,925,360	3,997,717	27
Ireland	676,392	3	294,625	358,547	2
	24,657,116		14,229,311	14,692,953	

It is to be noted that the figures refer to the fish as landed, and the value is the first value as realized by the fishermen or owners; and many things are excluded in the statistics of several other countries, as salmon and trout (even when taken in the sea), fish-livers and roes, fish-oils, sounds; the products of seal or whale fisheries; prepared or cured products, as fertilizers and fish-meals, pickled and dried fish and tinned fish. There are no complete figures available, but a moderate estimate of the ultimate value of the fishery products would be double the initial value, or about £30,000,000.

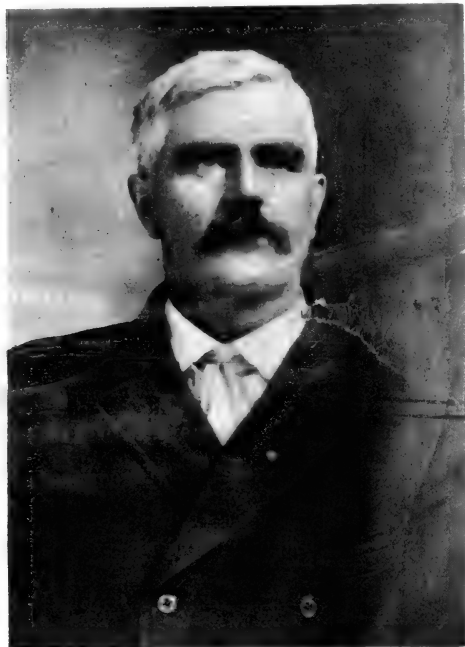
In the official statistics the fish are divided into two great classes, the pelagic and the demersal. The pelagic include the so-called migratory fishes, which swim in shoals near the surface of the sea, and are represented chiefly by the herring and the mackerel. The demersal include almost all other species, as skates and rays, flat fishes and such fish as the cod, haddock, ling, and whiting, fish which live at or near the bottom. This division corresponds generally to the two great fisheries, trawling and drifting. The following table shows the quantities and values of the pelagic and demersal fish landed in 1913:—

	Pelagic Cwts.	£	Demersal Cwts.	£
England & Wales	7,785,239	2,531,979	8,360,769	7,463,003
Scotland	4,532,093	2,100,649	3,296,257	1,824,711
Ireland	582,543	212,405	93,849	82,220
Total	12,899,875	4,845,033	11,750,875	9,369,934
%	52	34	48	66

More than half of the aggregate quantity landed, and about one-third of the total value, were represented by the pelagic fish; in Scotland and Ireland the predominance of the pelagic was marked. It is the herring which dominates this group, the yield of the greatest herring fisheries in the world. Very nearly half of all the fish landed in 1913, viz., 49.5 per cent., consisted of herring, the quantity being 12,183,368 cwts., valued at £4,572,295, or 32 per cent. of the aggregate value. The chief demersal fishes were the

LAKE HURON & GEORGIAN BAY FISHERMAN'S ASSOCIATION.

The Lake Huron and Georgian Bay Fisherman's Association, which was organized in February, is making remarkable progress, and the fishermen of those districts are responding splendidly to the call



W. J. SIMPSON, Tobermory, Ont.
President, The Lake Huron and Georgian Bay Fishermen's Association.

of the Association for members. By the time the fishing starts the Secretary, Mr. Brock McAulay, informed us that they expect to have over a hundred on the list, and these will range from Blind River in the north, to Kincardine on Lake Huron. Already the success of the Association is assured.

PORT STANLEY, ONT., AS A FISHING PORT.

The first fishing at Port Stanley was in the early '40's, by the late Henry Hough, who had one draw seine about 700 feet long. Pickerel, ciscoes, whitefish, perch, white bass and sturgeon were in abundance, but there were no markets to ship to, and he peddled his fish in the village, getting whatever he could for them. In the fall farmers would come in to get a winter's supply, paying from 50c. to \$1 for a lift, which might mean one or two good wagon loads. Sturgeon were very plentiful, but were considered a nuisance and were generally buried on the beach. A few years later on, Bell, from Sandusky, Ohio, started fishing with gill nets, and a small sail boat, and was followed shortly after by Shaw with one pound net. In 1877 Bickford & Howe started with pound nets and the following year Mr. M. Payne, the present Postmaster and American Express Agent at Port Stanley, bought an interest, and he built up quite a

shipping trade to Western Ontario towns. Mr. Payne was the first to ship to American markets or rather an American market, for Buffalo was the only market he could find, and has sold thousands of tons of blue pike there for \$1 per bbl. of 250 lbs. A few years later Capt. Wm. Berry, Capt. A. C. Brown and Harley Taylor, who are still in the business, started fishing gill nets with sail boats, and Mr. Taylor was the first to use a steam tug out of this port for gill nets. This was in 1905, and since that time the industry has grown each year until now Port Stanley is the largest fishing port on the lake, and has a fine fleet of nineteen wooden and steel tugs and two pound net fisheries, with up-to-date shore plants, representing an investment of over \$250,000, an offal plant and the only floating dry dock on the north shore of the lake. Port Stanley is also the largest summer resort on the north shore, and has hundreds of beautiful summer cottages and residences, Coney Island amusements and board walks, etc. A passenger steamer, The State of Ohio, runs between the Port and Cleveland during the summer months, and the Marquette & Bessemer Railway & Dock Co. operate a large coal ferry between here and Conneaut. There are two electric roads, the London & Lake Erie and the London & Port Stanley, running out of here to St. Thomas and London, making direct connections at these points with the fast trains on the Canadian Pacific, Grand Trunk, Michigan Central, Wabash and Pere Marquette Railways. By means of these shipping facilities Port Stanley fishermen are able to ship out their catches every night and land their fish in Canadian and American markets in absolutely fresh condition. In 1917 the catch amounted to over 6,000,000 pounds.

Vancouver, B.C.,
March 16, 1918.

Editor of Canadian Fisherman:

Dear Sir,—The story going the rounds that the fisherman do not want up-to-date motor boats to fish for salmon in the waters of British Columbia is false and misleading; most every fisherman (real fisherman) has an up-to-date boat; the old row and sail boat belongs to the cannerymen, and no man unless hard up would think of going out in these open boats day and night, where there is scarcely ever a 24 hours without rain, and in early season snow squalls. At some of the canneries there is not one white man, most every one of the fishermen are Orientals. The Commission was purely a cannery man's Commission, and they should pay the costs. The fishermen have petitioned the government to be allowed to use their up-to-date boats, but the government refuses, these cannerymen should be ashamed to say the fishermen cannot buy their own boats and engines after so many years of fishing, these rich salmon cannerymen must have got all the money. Evidently Mr. James, one of the Commission, made something out of his trip, as your paper states he has got a license out here for seining salmon.

Yours truly,
T. C. NELSON.

P.S.—Even most of the Indians on the coast own up-to-date motor boats.

NEWLY FORMED MANITOBA BRANCH OF THE CANADIAN FISHERIES ASSOCIATION.

Minutes of an informal meeting of the following parties connected with the Fishing Industry, held in the office of the Canada Food Board, Scott Block, Winnipeg, at 10.30 a.m. on the above date.—

Present, J. W. Simpson, Northern Fish Co., Ltd., Selkirk; Capt. W. Robinson, North-West Navigation Co.; J. Sigurdsson, Sigurdsson Thorvaldsson Co.; W. J. Guest, The W. J. Guest Fish Co., Ltd.; A. McIntyre, North-West Navigation Co., Ltd.; T. J. Jones, Armstrong Trading Co.; W. H. Climie, The Winnipeg Fish Co., Ltd.; E. S. Sigurdsson, Sigurdsson Fisheries Co.; H. Einarsen, Fairford Trading Co.; Capt. B. Anderson, Gimli; J. T. Jonasson, Riverton Fish Co.; J. Nicholson, Fisherman, W. Douglas, The W. J. Guest Fish Co., Ltd.

It was moved by Mr. J. W. Simpson seconded by J. Sigurdsson that Capt. Wm. Robinson take the chair and that W. Douglas act as Secretary pro tem.—Carried.

Captain F. W. Wallace of the Canada Food Board, and Mr. E. A. Philp of the Winnipeg Office of the Food Board, addressed the meeting, suggesting that it was deemed advisable that the interests connected with the Industry, embracing the Fishermen, the producing Companies and also the distributors should get together and work out a scheme whereby an adequate supply of the catch of fresh fish caught in the summer season, should be available for the Canadian trade at reasonable prices, having in mind the idea that the Canada Food Board was instituting a wide policy for publicity, and that it was expected that a very large increase in the demand would be the result of the campaign. The representatives of the Food Board expressed their appreciation that the meeting represented the different channels necessary to the marketing of fish, and after making request that the representatives endeavor to get together with a scheme, to be communicated to the Board, Capt. Wallace and Mr. Philp retired.

Moved by Mr. J. W. Simpson, seconded by Mr. J. Sigurdsson that the meeting form a branch of the Canadian Fisheries Association, under the name of the Manitoba Branch.

The matter of working out details of organization, obtaining copies of the bye-laws from headquarters, foes, etc., was left in the hands of a Committee consisting of Messrs. J. W. Simpson, Joe. Sigurdsson, A. McIntyre, and Mr. W. Douglas, the latter to act as Secretary pro-tem. A meeting to be subsequently held at which the details of the organization would be dealt with and officers elected for the term.—Agreed.

The question of Whitefish catch on Lake Winnipeg for the coming season was dealt with at considerable length. The discussion being taken part in by Capt. Robinson, J. Sigurdsson, J. W. Simpson, E. S. Sigurdsson, Capt. Anderson, T. J. Jones, W. J. Guest, A. McIntyre, Mr. Nicholson and Mr. Douglas.

Pickereel Fishing on Lake Winnipeg.

A petition signed by a number of fishermen on Lake Winnipeg, praying the Minister of Marine and Fisheries to open the season for fresh Pickereel on 15th May, instead of 1st. June was passed round, and discussed. It was moved by Capt. B. Anderson seconded by E. S. Sigurdsson that we endorse this petition and that a copy of our resolution be forwarded to the Deputy Minister of Naval affairs and also the Fishery Inspector of this District.

The question of changing the dates of the Fishing season for Fall Fish was also discussed, and on motion of J. Sigurdsson and A. McIntyre, it was resolved that this branch make request to the Department at Ottawa, to change the season from 1st September to 15th October, to read 12th September to 30th October.—Carried. Copy of this resolution also to be forwarded to the Fishery Inspector of this District.

The matter of the establishing a Fish Hatchery on Lake Manitoba was discussed fully, and on motion of H. Einarsen seconded by J. Sigurdsson, it was resolved that:—

This branch endorse the petition now being circulated in this connection.

That in view of the increasing demand for local varieties of our Manitoba Fish, and the natural adaptability of Lake Manitoba for Hatchery purposes, and the necessity of making provision to cope with the requirements of the Canadian people in the near future, that we urge upon the Department the scheme, and ask the prompt and favourable recommendation of the Inspector of the District, and entreat the Minister to grant the prayer of the petitioners.

It was moved by Mr. J. W. Simpson seconded by T. J. Jones and carried that,—

We suggest to the Canada Food Board that no one should receive or hold a licence for summer fishing, or allowing him or them to deal in Fresh Fish in an unfrozen state, during the summer months unless he or they are prepared to take care of the catch by having a supply of ice stored for the purpose, or by having proper freezing facilities and capacity to protect any surplus they might have. That in the interest of conservation and with the view of eliminating possible waste of valuable food stuff this resolution should be immediately communicated to Mr. A. E. Philp, of the Canada Food Board at Winnipeg, for such action as he deems advisable.

Mr. J. W. Simpson addressed the meeting and expressed the opinion that we, as representing the principal handlers of fish in this section of the Province, desire to extend to Mr. A. E. Philp, our acknowledgement of the courteous treatment he had shown all during the winter season, and emphasized the fact that Mr. Philp had had a difficult task to perform and that he was satisfied that not a single dealer had a fault to find with any action of Mr. Philp. Capt. W. Robinson in seconding the resolution of appreciation endorsed all that Mr. Simpson had stated, and added that Mr. Philp had proved the right man in the right place.

The meeting adjourned, next meeting to be called at a later date by the committee named above.

BULLETIN, EDUCATIONAL DEPT., NEW ENGLAND FISH EXCHANGE.

"I like fish when I get it in a restaurant, but somehow I can't seem to enjoy it at home," explained a business man recently. And his explanation of why this should be so, is also the explanation of why many other people do not enjoy fish at home as much as they might.

He continued: "There is much more to the gentle art of cooking than merely knowing how long to cook a certain thing. There is psychology to it, which most housewives don't grasp at all. It isn't merely the taste of a thing, it's the looks of it. Indeed, I'm not

at all sure that the appearance doesn't really count for more than the taste with many people.

"When you go into a restaurant, and ask for fried fish, for example, the waiter brings you a platter with a slab of fish hidden beneath a thick covering of well browned crumbs. A sprig of parsley and probably a bit of lemon adds to the attractiveness of the dish. It looks good to eat, and you attack it in the right frame of mind. And, if you don't have that frame of mind, no matter what you eat, you won't enjoy it.

"Now, on the other hand, when the average housewife serves fried fish, you are presented with a crumbled mass of greasy flakes. Probably the fish served by the housewife is as fresh, if not fresher than that of the restaurant, and certainly there's three times as much of it, but it's been spoiled in the cooking.

"There are mighty few housewives who have learned the knack of frying a fillet of fish so that it can be served without falling apart; and few of them who can fry a bit of fish without getting it soaked in fat. And the occasions on which I have had the pleasure of having an attractively-cooked and served piece of fish set before me, even in the best regulated households, are so few that it wouldn't take more than the thumbs of both hands to count them.

"Properly fried fish is not a mass of greasy flakes; it's a solid mass of delicious white meat hidden beneath a thick frosting of delicious brown crumbs.

"If the housewife of this country would only learn what the French woman and the Italian woman seems to have acquired by instinct, that a few minutes spent in improving the appearance of a dish of food is time well spent, she would be the greatest cook in the world. And, also, she could save a great deal of money."

How Does Refrigeration Alter Fish?

The changes in the meat or muscle-substance of fish, such as cod or haddock, during refrigeration, are a most important matter. Little has really, hitherto, been known about it. About twenty years ago, Professor Prince studied, in Ottawa, sections of the frozen meat of boiled lobsters, in connection with an experimental shipment from Halifax to London, under the auspices of the Fisheries Department. He found that very minute crystals of ice appeared between the muscle fibres resulting in loss of firmness, and a slight loss of flavor, on thawing out, especially if the cold storage was prolonged.

Some recent scientific studies, published in England ("Frozen Fish and Alterations in Taste," etc., by Professors Stanley Gardiner and Nuttall, Cambridge University, England, *Journal of Hygiene*, XVII, Number 1, 1898), confirm Professor Prince's results, and show in an interesting manner, the changes undergone in fish subjected to refrigeration.

Fish muscles, it may be pointed out, consist of minute fibres or cylinders of soft substance, semi-fluid, and contractile (called sarcoplasm), each fibre enclosed in a thin sheath (called the sarcolemma), like a sausage skin enclosing its soft contents.

Seven very important changes occur during ordinary freezing:—

(1) The red constituent (haemoglobin) of the blood dissolves and suffuses the clear serum or blood-liquid, so that the muscles near the great arteries and veins are stained a reddish color. This red discoloration, due to freezing, is confined mainly to the under-side

of the backbone as far back as the tail-muscles. It is not due to the bursting of the arteries or veins under the backbone, but to diffusion, following the process of haemolysis.

(2) The plump glossy appearance seen in the fresh fish diminishes, and the skin looks somewhat dried and shrivelled, and there is a loss of weight.

(3) The most important change is of a microscopic nature, and affects the minute fibres, or cylinders, of the soft contractile muscle substance. The water in each small fibre separates from the albumin and forms a central core or rod of ice, or it may burst through the delicate sheath of each fibre and congeal outside, or, in very slow freezing, the cylindrical fibres become flattened in various ways, as a lead-pipe flattens, and may show long sharp edges or flutings.

(4) The fibres assume a condition resembling coagulation, and cannot, when thawed out, suck in or re-absorb the exuded fluid, which as thawing proceeds, escapes from the fish, especially if subjected to any pressure. This does not seem to apply to frozen herring however.

(5) The ice crystals produce spaces in the midst of the fibres, which are empty when the crystals are thawed, so that the flesh of the fish becomes looser and its digestibility is really increased.

(6) There is a loss of volatile substances to which fresh fish owe their peculiar, rather agreeable, aroma, and a loss of fluid and other nutritive elements, but this small loss is counter-balanced by stoppage of decay, and absence of the accompanying unpleasant odor.

(7) There is no doubt a certain amount of drying or dessication in the freezing process, also some oxidation, involving not only loss of agreeable aroma, but even a slight loss of flavor, and any fatty materials (as in mackerel and herring) tend to become rancid. The red haemoglobin of the blood becomes oxyhaemoglobin, so that the blood appears brighter in frozen fish than in ordinary dead fish.

It only remains to add that many of the above changes, which take place during the usual process of refrigeration in air, do not take place in the same degree when fish are frozen in brine (as in the Danish method.) In such more rapid freezing processes the water fluid separates in each fibre, but remains there as a central minute column of ice. Each fibre becomes a hollow albumin cylinder, as it were, enclosing an ice-pith or central column of ice, although the sheath may rupture and the fluid escape on thawing. The more rapidly the freezing is accomplished, the less are the changes just described. The main difference is, however, due to the far smaller ice-crystals formed in rapid freezing, as compared with ordinary slow freezing. There is less drying, less loss of juice, avoidance of rancidity and of mouldiness, if the frozen fish are wrapped in air-tight wrappings excluding the air.

If freezing is completed in one or two seconds, the fibres undergo no essential change, and have the appearance of the fibres in fresh unfrozen fish, and no ice crystals appear, that is practically no separation of water occurs; but when five or ten minutes elapse during refrigeration, minute columns of ice crystals are formed, and the fibres may rupture, or may remain intact. It appears that various species of food fish differ in their resistance to the changes described, while the size, the thickness of the skin, the presence of dense fatty layers, or of large spaces, such as the swimming bladder, and even the shape of the fish, are factors, which affect the results of the freezing process.

Report of Fishery Commission of 1917, Investigating Salmon Fisheries of B.C.

"The supply of salmon in B. C. waters is tending to decrease," according to the weight of evidence submitted to the Fishery Commission that investigated certain phases of the salmon industry last summer. The Commission was composed of W. Sanford Evans, Chairman; H. B. Thomson, and F. T. James. It took evidence in B. C. for two months under oath, and extended an invitation to all interested to express their views. The final report of the Commission has been presented to Colonel the Honourable C. C. Ballantyne, M.P., Minister of the Naval Service, and is now on its way to the King's Printer.

Officials of the Department freely state that the report contains a mine of accurate information, and that its conclusions are exceedingly valuable, and presented in statesmanlike form. Already the Department has acted on many of its findings, which were communicated to it, prior to the final drafting of the report. It appears likely that it will materially aid the Minister in his laudable constructive and reconstructive program for the B. C. fisheries, now well launched to the satisfaction of all concerned.

In spite of the pessimistic evidence the commissioners view the situation with optimism, for they report, "Whatever may be the conclusion as to the present tendency of the supply, it would appear to be beyond question that the existing quantity of salmon is small in comparison with the production of which the rivers and streams in B. C. are easily capable. With adequate protective measures, with a few more fish hatcheries and channels kept free from obstructions, the supply should materially increase."

"It is by what is obviously possible that the present supply should be measured. The potential national value of the Pacific salmon fisheries would seem never yet to have caught the practical imagination of the Canadian people, or of Canadian administrations."

"These rivers and streams, for the most part unsuitable for navigation, are the natural spawning bed of five species of salmon which require of man nothing but the chance to multiply, which go out to feed in the ocean and when mature, return on their fixed dates with a rush to the nets."

The Commissioners approached the problem of the B. C. salmon fisheries with a knowledge that the right to fish in the tidal waters of the Pacific Coast, belongs to every B. C. citizen, and that only the Dominion Parliament can limit that right, and it only in the general public interest. They lay down the fundamental principle that the supply of salmon should be conserved, the public provided with adequate supplies at reasonable prices, an expert trade encouraged, the tax-payer asked to pay only a fair share of the cost of administration and conservation, those engaged in the industry protected and waste and unprofitable employment of labor and capital avoided.

The nature and habits of Pacific salmon are described in detail. The sock-eye is the salmon of the can, while the four other varieties are especially in demand in the fresh and frozen state. The canning season lasts only two months in the year, and the catch is irregular. The continuance of the supply of salmon depends absolutely on the new generation hatch-

ed each year. It is justifiable to catch all fish beyond the number necessary to maintain natural reproduction. Salmon should not be killed too near spawning time. All streams should be kept free from obstruction, and the fish allowed to get to the spawning beds and remain unmolested where they of course die. Hatcheries are important.

While the supply of salmon is decreasing, yet the total pack of B. C. has shown an increase, owing to other varieties than sockeye being canned. The sockeye pack has decreased. From 1902 to 1910, sockeye was 78 per cent. of the total pack, but from 1911 to 1917 it was less than 42 per cent. The Commissioners state "The sockeye figures for 1916 and 1917 are distinctly disquieting, and indeed the small catch on the Fraser River in 1917, if it means the end of the cycle of big runs on that river, is of the gravest consequences." Besides that, the average supply of sockeye in northern B.C. is not being maintained, while spring salmon and cohoes are decreasing.

In 1917, the money value of the salmon pack of B.C. was over \$12,000,000. Calculated on the opening prices, the average money value of the pack from 1911 to 1916 was over \$7,125,000. To these figures must be added the value of salmon marketed fresh, frozen or cured, which in 1916 was \$2,880,515, representing the value of 34,908,500 lbs. of salmon. B. C. canning plants can salmon exclusively, though modest beginnings have been made in canning herring and pilchard. The industry therefore, must combat the peculiar condition of salmon fishery. Salmon runs vary from year to year, with one big year expected in every four. But the industry must measure up to the big year, while it carries on through the lesser years. In 1876 B. C. had only three canneries; in 1901, 73; in 1916, 72; though except in 1905, 1909, 1913 and 1916, nothing like the full number of plants existing were operated in any year since 1901. If the supply were stabilized at its economic maximum, all the plants could operate every season.

The irregularity of the runs of salmon necessitates that a cannery be equipped to handle an extreme 24 hours peak load, which may not materialize, for the plant will not be put in use except at its peak load. The season is short. Canneries operate an average of only 55 days out of 365, though the fixed investment must be carried for the whole year. The canneries on the Fraser working at full capacity could have put up the whole Fraser River pack in 1916 in one and two-third days of 12 hours each, though it did take them forty-eight days. In the northern waters the pack in 1916 could have been put in nine days of twelve hours each, but in reality it took 62 days.

Fixed charges in the salmon canning industries are heavy. Thirty-three canneries in Northern B.C. in 1916 show a fixed investment of \$3,492,423.73, and the value of the pack was \$4,193,306.45. If all borrowings were taken into account, the turnover was less than the capital invested. In 1916 the profit of the canners was above the average, but in 1913, because of a poor catch and low prices, the fixed investment of 28 canneries was \$2,979,514.56, and the value of the pack \$1,770,318.32, showing a loss of \$1,209,-

106.24, while the turnover was less than half the capital employed. Before the canning season opens large commitments must be made for materials and labor. In one cannery in a recent year, when only 5,897 cases were packed, the manufacturing costs, exclusive of tin-plate, fish and handling fish, were \$4.05 per case. If the pack had been what it was four years before, these costs would have been only \$1.31 per case. Whenever the supply of fish decreases the manufacturing costs rise.

The United States salmon canners are the dominating factor in making export prices for canned salmon, which set at least the minimum for domestic prices in Canada. From 1910 to 1916 the United States packed 81.8 per cent., or 38,791,470 cases of the world's pack, and B.C., that is Canada, only 15.3 per cent., or 7,299,757 cases. The United States consumed locally 72.5 per cent. of its pack, for which it has a protected market, exporting only 27.5 per cent. B. C. exported 72.8 per cent. of its pack, while the domestic demand absorbed only 27.2 per cent. The 27.5 per cent. of the United States pack is twice as many cases of 48 pounds each as the 72.8 per cent. of the B. C. pack. It is evident then, that the B. C. canners do not control the market. If district No. 2, the northern district, is to be considered by itself, it is certain that price control does not rest with it. In 1913, its pack was small, being 245,915 cases less than the year before, with costs per case higher. But the pack could not be sold on the basis of these higher costs, the ruling price obtained being \$1.80 per case lower than in the previous year, a decline of over 23 per cent. The district lost over \$354,000 that year, without making allowance for depreciation. The year previously the profit for the district had been over \$879,000, so that the fluctuation in the profit and loss statement within one year was no less than \$1,233,000.

Price is sensitive to quantity in the canned salmon market, particularly with sockeye, that leads and governs the other varieties in price. Since 1903, however, although canned sockeye prices had increased, yet they have not on the whole increased faster than general prices, while they have fluctuated more violently than general average prices. Supply and demand act normally in the canned salmon market, and this forms an important general condition of the salmon canning industry.

Referring to profits from the industry, the Commissioners say, "From the fact that in the industry there is only one turnover in the year, and the investment is productive for so small a proportion of the year, it is clear that the margin on the turn-over must be greater than in most other industries for the business to have survived at all." From 1911 to 1916, in district No. 2, 17.7 per cent. of the money realized from the pack was profit, subject to certain reductions. Leaving out the lean year of 1913, the average profit was 20.9 per cent. This exceeds the usual profit on an industrial output which is produced in quantity and depends upon a wide general market, and the salmon canning industry under perfect conditions should prove highly profitable. But "the history of B. C. cannery establishes that to a majority who entered upon the business it has been the reverse of profitable. We have not been able to reach any satisfactory conclusions as to the profits taken out of the business by those who have been successful, but the possibilities under ideal conditions are good.

But conditions are very far from satisfactory. The industry is over-equipped, and the supply of raw material is too irregular and uncertain."

In the opinion of the Commissioners, all the conditions surrounding the industry should be stabilized, and the inefficient use of capital and labor obviated or prevented. The solution of possible excessive profits to individuals is not to be found in permitting more capital or labor than can efficiently perform the work to engage in the industry, for that might destroy all profit, but rather, in return for the establishment of conditions that are stable and economically sound, the industry should contribute to the public treasury through graduated license fees that proportion of its profits which is in excess of a reasonable return for capital and enterprise. This may not be practicable until the extent of special war taxation is developed, but the restrictions recommended on the number of canneries in district No. 2 should be instituted only upon the conditions "that excessive profits if any, should go to the public, and that exploitation as a fact and a motive should be eliminated from the industry."

Governmental administration is in more direct and intimate touch with the fisheries than is the case with any other important national industry. The Fisheries Department is most parental in its relationship to the B. C. fisheries. Its hand is daily on this great industrial business, and moulds its principal condition. The Commissioners declare that the fisheries need not only to be regulated and inspected, but also to be made to yield the greatest possible amount of national wealth. They suggest the importance of establishing a clear understanding of the position of the administration, in order that only dealings direct with itself on business principles may avail. All appointments to the fishery inspection staff should be placed under the Civil Service Commission, and political patronage eliminated.

Dealing with the duplication of organization, by the B. C. Government and the Dominion Government, and the fact that the accomplishment of both have fallen short of the requirements of the situation, the Commissioners suggest that the Dominion Government should invite a conference with the B. C. Government for the consideration of the unsatisfactory position.

The commissioners answer specifically seven questions submitted to them by the Minister of the Naval Service, and in answering made recommendations. They report that the number of cannery licenses in district No. 2 should not be increased for five years and that the license duties should be greatly increased and be graduated according to the number of fish taken for canning and the profits realized, so that while enjoying adequate return for capital and enterprise, the canneries may contribute to the public treasury due compensation for the privileges conferred. New fishing areas may warrant a new cannery or canneries. The minimum cannery license fee should be not less than \$1,000 a year. Yearly returns should be made by the canneries showing the main items of cost, the business done and the profits or the losses. The commissioners think that free trade in cannery licenses would only open the way toward inefficiency and loss.

The commissioners recommend that the prohibition of motor boats in gill-net areas in district No. 2 be continued for another five years, when the question may be reconsidered.





ARTHUR BOUTILIER, Halifax, N.S.
Director of the Canadian Fisheries Association.



W. M. HODGE, Lockport, N.S.
Director of the Canadian Fisheries Association.

The number of fishing boats in any area should be determined by the number of salmon that may be caught there without danger to the permanence of the supply. Government policy should have reference to the necessary restrictions on the fishing rather than that fishing restrictions should conform to government policy. The report declares that there should be no increase in the boat-rating in district No. 2 and even suggests that certain reductions might be desirable.

Beginning with 1919 the commissioners recommend that attached licenses be done away with, that only one form of gill-net license be issued without reference to any cannery, and that competence as a fisherman be established as a qualification for the license. They consider that agricultural settlement is a poor basis of qualification for a fishing license. British citizenship should be insisted on, and competence as a fisherman acknowledged as the **strongest** claim to license. Local boards should be appointed to test fishermen and issue certificates of competency and all applications for licenses should be in on or before April 1st each year.

While admitting that the prohibition of the export of salmon other than sockeye for manufacturing purposes is a policy that it may be found wise at some time to re-adopt, yet the commissioners think that that time has not come. They base their conclusion on the general ground that the greater the number of competitors and the keener the competition, the higher tends to be the price per fish paid to the fisherman. At the same time they intimate that the more or less irregular incursions of American buyers cannot give the Canadian fishermen anything comparable in value to the steady demands of a fairly conducted and successful Canadian industry.

The commissioners find that it is impossible to ascertain the actual amount of money in cash originally and at present invested in B. C. canneries, for only three canneries operating at the time of the boat-rating becoming effective were in the hands of the original owners, having changed hands many times and lost the early records. Replacement value, however, could be easily obtained by appraisal. In a financial statement specially prepared by a firm of chartered accountants, covering the years 1911 to 1916 inclusive, and giving details of 27 canneries, the average yearly investment is \$2,645,116.01; the cost of the pack \$2,430,897.70; the value of the pack \$3,245,631.37; the gross profit \$814,735.66; the head office expenses \$256,023.24; the net profit without depreciation \$558,710.42; the average depreciation \$57,307.33; the average total net profits \$501,403.09. Thus the money realized from the sale of pack, viz., \$19,473,788.22 in six years, consisted of 84.55 per cent. costs and 15.45 per cent. net profits. It is important to remember that to investment in plant must be added other items, for instance, the average yearly cost of financing, namely, \$2,430,897.70. Because of the systems of accounting gross profits may be shown to be smaller than under other and more methodical systems. Much larger depreciation than 2.014 per cent. should be allowed, thus reducing the net profits.

The commissioners suggest a reconsideration of the administrative system so as to make it more effective in dealing with the Pacific fisheries and to establish co-ordination and avoid overlapping activities. Because the Pacific committee of the advisory board does not create a local organ it is futile to fit the need. What is needed is a readjustment to operate directly,

comprehensively and effectively on the spot, for from day to day the system of administration must determine the condition under which the industry may operate. The commissioners do not decide whether an individual or a commission would better function.

Throughout the report emphasis is placed on the need of increased provision for scientific investigation. The officials of the department, both at Ottawa and in B. C., are highly recommended and it is suggested that the inspecting staff should be increased and reasonable superannuation allowances provided.

Spawning areas should be carefully surveyed. Adequate measures should be taken to maintain the supply of salmon other than sockeye. Scientific evidence should govern close seasons. The weekly close time is a more effective instrument of conservation than the annual close season. Close time should go by the moon not by the clock.

Special terms and considerations should govern the granting of drag seine licenses. Fishing boundaries should be shortened in all the northern districts. All net areas should be hydrographically surveyed.

The economic value of trap-fishing is admitted though the department is advised to make no radical change in its policy but to consider each application for a trap on its merits. Fish mergers should be licensed. Salmon far advanced to spawning should not be taken from the water and sanitary regulations applicable to the condition of all fish should be enforced.

Indians should be provided with fish from waters near the sea and prevented from destroying spawning salmon. Trout, the deadly enemy of young salmon, should be fished intensively.

Immediate provision is urged to afford protection to the halibut in Pacific waters, by close seasons, closed areas or otherwise as international agreement may suggest.

ALASKA SALMON CO. PLANS EXPANSION.

The annual meeting of the Alaska Salmon company was held at the office of the company in San Francisco on Monday, January 2. The following officers were elected to serve for the ensuing year: Cress P. Hale, president; Irving S. Rosenblatt, vice-president; Ralph E. Cotter, secretary; Louis Getz, treasurer. The R. E. Cotter Company, with offices in San Francisco and Seattle has been appointed sole selling agent.

The Alaska Salmon Company is preparing to increase its capital from \$200,000 to \$300,000 and the capacity of each of the Alaska plants on the Kvichak and the Nushagak rivers, will be considerably increased.—Pacific Fishermen.

Within a few weeks, mackerel will be schooling just south of Cape Cod, and the seiners will be bringing their catches into Boston.

O
O
O All who are really interested in the develop-
O ment of the Fishing Industry of Canada will
O be present at the C. F. A. Convention, Halifax,
O August 6th, 7th, 8th. Are you interested?
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The History of a Fish

An Address

By PROF. A. G. HUNTSMAN,
Biologist to the Biological Board of Canada.

Delivered at the Annual Meeting of the Lake Erie Fisheries Association, February, 1918.

Mr. Chairman and Gentleman: It gives me great pleasure to be with you again and witness the very successful convention that you are now bringing to a close, for it is most inspiring to anyone having to do with our fisheries to see with what earnest efforts your representative association is striving for the improvement of the conditions in your district.

My subject—"The History of a Fish"—may require a slight explanation, for the word "history" is susceptible of several interpretations. It has been said,

for it is one of those fishes that have been little used up to the present time, and, although we expect that it will have such a history in the future, it is not as a prophet that we come before you. How then can we write its history at this time? We can do it by telling where it is, what it eats, how it breeds and grows, and in short all that we can find out about its life.

The sum of our knowledge of such a living thing we call its "biology," or we may call it the science of the fish. This word "science" is by some glorified, and by others disparaged, but its only merit is the thoroughness it should show, and it deserves to be disparaged only when it is false. You are all to some degree biologists and scientists, for science can be nothing more and certainly should be nothing less than thorough systematized knowledge.

It is our misfortune to have been studying a fish that lives in the sea along our Atlantic coast instead of one of those that abound in your wonderful lake and for that reason it may not appeal to you, but what it loses in attraction from strangeness it may gain from novelty. We do not propose to weary you with many details concerning this fish, but we shall refer merely to some outstanding things in connection with its life. But before doing so we desire to give you some idea of the way in which we obtain our information concerning the fishes of the sea and also to tell you something of the condition of the fishing and of the people in the places where our work is being done.

Under the Department of the Naval Service the Biological Board of Canada, which consists of representatives from the principal universities of the Dominion and of which the chairman is Professor Prince, has undertaken the task of obtaining information concerning the conditions that are to be found in our waters, particularly as they affect the fisheries. For accomplishing this purpose on the Atlantic coast they have established a Biological Station at St. Andrews, New Brunswick, on a branch of the Bay of Fundy the St. Croix river, which happens to be the boundary line between the State of Maine and the Province of New Brunswick. To this station voluntary workers from the universities and colleges of eastern Canada go every summer during the time they can spare from their teaching duties, and carry on investigations concerning the fishes. On the site of the station there have been erected buildings for the work, the principal one being the laboratory, which contains a museum of fishes and other marine animals, tanks for keeping the fishes alive while being studied, and the many scientific instruments and apparatus that are so necessary, as well as a long series of working desks with gas for heating purposes and with running fresh and salt water.

The St. Croix River, on the shore of which the station is situated, is not a river in the ordinary sense, for it contains salt water and is nearly a mile wide and a hundred feet deep, and, most unusual of all for a river, the current does not flow one way only, but both



Skate on Biological Station Wharf.

"Happy is the nation that has no history," and in this sense history denotes famine, plague, and war, such as accompany all great changes and involve much suffering, so that in the present critical times we say that history is being made. With somewhat similar reason we might say, "Happy is the fish that has no history," for ordinarily the history of a fish would mean an account of its exploitation by man. In this sense our fish can scarcely be said to have a history,

ways, for a little more than six hours in one direction and for about the same length of time in the other, and this current is so strong, in spite of the depth of the river, that when it flows out into the Bay of Fundy it is able to lower the surface of the water by as much as twenty-five feet or even more. This, of course, is the tide, whose currents make navigation so difficult, and which causes such changes in the level of the water that landing from a boat even when a wharf is available may be no easy matter. At the end of our wharf a landing float, which rises and falls with the tide, enables us to land easily at any time, and a swinging gangway, which leads from the float to the top of the



Herring Weir at St. Andrews, N.B.

wharf is four times the height of a man above one. When the tide falls, much of the bottom in the shallower water is exposed and reveals masses of green, brown, and red seaweed clinging to the rocks, as well as innumerable kinds of queer animals.

We have three motor-boats for getting about, two small ones between twenty and thirty feet in length, and a larger one sixty feet long, which is used for the outside work, seeing that it is completely decked in to stand rough weather. This larger one is called the "Prince," being named after Professor Prince, and it is well fitted out for our work of fishing, dredging and trawling. Six men can eat, sleep, and work aboard it with fair comfort, and therefore we use it for trips of considerable length.

The fishes, which are to be caught in the salt water, are for the most part decidedly different from those to which you are accustomed, sharks (chiefly small) and skates being quite common. The latter with their slender tails and broad flattened bodies, without a very distinct head, are indeed curious creatures. One caught beside our wharf, of which we show you a photograph, was as long as a man, and that kind is appropriately called the barndoor skate. Although until recently they were thrown away as useless, they are now being sold upon our markets, for I have repeatedly seen them exposed for sale in Toronto during this last winter.

The principal fishery in the waters near the Station is for young herring or sardines, as they are called. The salt water herring, though somewhat similar in appearance to the herring of the lakes, is in reality a very different fish, being more closely related to the Gold Shad or Sawbelly, which is found in Lake Erie. Enormous schools of young herring enter Passamaquoddy bay and the St. Croix river during the summer

and fall, and are caught in permanent traps, called weirs. The latter, which are somewhat similar to your pound-nets, are built near shore, just far enough out to have a fathom or so of water at low tide, and each one consists of a circular wall of piles driven into the bottom close against each other and topped either by brush or by a series of poles on which a net is stretched, the whole wall being high enough (over thirty feet) to reach from the bottom to the surface at high tide. The funnel-like entrance to the enclosure is on the shore side, and from its centre a fence or leader, constructed similarly to the wall of the weir, runs shoreward nearly to high tide mark. The sardines that enter the weir during the night are taken out at low tide. They are brought together by a purse-seine, from which they are dipped into boats by means of large dip-nets. They are then measured in half-barrels or tubs, and loaded into the larger sardine boats, which are equipped with both sails and gasoline engines, and which carry the fish to the factories where they are canned. The young herring, although only from three to six inches long, are so abundant that from sixty to eighty thousand barrels are taken annually along a coast of only about twenty miles long.

Our work last year took us far afield, for we spent the entire summer in the Gulf of St. Lawrence over five hundred miles by water from our headquarters at the Station. The "Prince" in charge of two capable men, Captain Rigby and Engineer Calder, made the trip in the middle of May. We voyaged only by day, encountered both fair weather and foul, experienced a gale just before reaching Halifax and a snowstorm on leaving it, and entered the Gulf of St. Lawrence through the long narrow strait, or gut, of Canso to find on cruising along the straight, unbroken, inner coast of Cape Breton island that the high land was still covered with a mantle of snow and that spring had not yet arrived.



Fishermen's Huts, Eastern Harbor, N.S.

Our base for the summer's work was Cheticamp or Eastern Harbor, a place situated on the inner coast of Cape Breton island not far from its northern extremity at Sabot strait, and more than thirty miles in a straight line from the nearest railway. It is a thriving fishing village with an exceedingly good harbor for small craft. There is a strip of rolling, arable country about two miles wide running along the coast, back of which the land rises rather abruptly to a height of about a thousand feet to a barren tableland, traversed by deep, narrow valleys or gorges. The wind,

when blowing off shore from the southeast, drops from this high tableland down to the coast, giving rise to such powerful gusts that we were informed our boat was not safe when in the harbor and made fast to the wharf if a southeast wind should come up. Indeed, it was not unusual to see buildings and beacons fastened with southeast stays to prevent their being overturned or carried away when the wind was from that quarter.

The conditions in the water were likewise very different from those to which we had been accustomed at St. Andrews, for the rise and fall of the tide at Cheticamp is only three or four feet and the water is so little mixed that it becomes decidedly warm at the surface in the summer and yet remains icecold at fifteen fathoms down. The result is that the temperature of the air in summer is rather high and fogs are very



Weeding Potatoes, Eastern Harbour, N.S.

infrequent as compared with the Bay of Fundy. For the fishes the differences are just as great, since warm-water fishes unknown or rare in the Bay of Fundy, such as the mackerel and cunner, as well as the oyster, abound in the warm surface water, while cold-water fishes like the cod, which at St. Andrews is taken for the most part only during the cold season, may be got in abundance throughout the summer in the deep cold water.

The people of the district are almost entirely French Acadians, and still retain their old language, a peculiar type of French, as well as some of their old customs and dress. It was not an unusual sight to see the women with picturesque white, black, or red shawls tied around their heads working in the fields with the men. Many of their farming implements are far from modern, since the short summer season and the early frosts greatly limit the number of crops (chiefly hay, oats, and potatoes) that can be successfully raised and make agriculture much less lucrative than it is in southwestern Ontario. A very diminutive corn, not unlike popcorn and growing little higher than the bean, is the only kind with which they have any success. However, there is some compensation in the rapidity with which crops grow and mature during their short summer. Although their spring arrived so late we had ripe blackberries some time before our departure, and yet, when we reached St. Andrews we were unable to find any that were even beginning to ripen.

The fisheries of Eastern Harbor are carried on by farmer-fishermen and whether they are more farmers than fishermen, or the reverse, we do not know, but, as few of them own their own boats and gear, and as

they depend chiefly upon sails, motor-boats being few in number, the fishery is not very effectively prosecuted. It was indeed the exception to see all the boats away from the harbor and trying for fish. When fishing the men live in little huts which are closely crowded together on either side of the narrow, principal street of the village, which skirts the water front. On Sunday evenings the fishermen are to be seen trudging from their farm home a mile or more away, down to the village so as to be ready for the trip on Monday morning, and each of them carries, slung over his shoulder, a white cotton sack, in which are his bread and other provisions for the week or half-week.

The principal fisheries are for lobsters and cod. The former are caught in shallow water with a small trap called a lobster pot, made usually in the form of a half-cylinder, the sides of lath spaced about an inch apart and each end with a net-funnel or "head" pointing inward, which permits the lobster to enter and reach the bait inside, but prevents him from escaping very easily. These pots are weighted with stones and lowered to bottom with a buoy attached to the line, and are visited daily. Another type of lobster pot, which has been introduced by fishermen from Newfoundland, was found in use near Cape North some miles away. It is smaller than the usual type and is triangular in shape with a head on each of the three sides. Those using it claim that it is more effective than the ordinary one. The lobsters are all canned in local factories, whose operation is limited to the short open season, which lasts from the middle of April to the middle of July.

The cod are caught in deep water on set lines, called trawls, which are baited with herring, clams, or squid, whichever can be got most easily. The cod are



Types of Lobster Pots and primitive anchor, or "hillock," Cape North, N.S.

cleaned, split, scrubbed and washed thoroughly, and finally salted in brine. Afterwards they are drained in a press pile and then dried in the open in the fields on long trestles covered with chicken wire, called the flakes. A very fine quality of fish is prepared in this locality.

Our work consisted in getting information concerning the fishes in the water and the conditions under which they were living. We used most of the usual gear of the fishermen, such as seines, gillnets, traps, hand lines, set lines or trawls, and the otter trawl, as well as other gear of a special nature. Among the latter were the usual naturalists' dredge, a small otter trawl of sacking for taking the fry of fishes, numerous fine nets for

towing, made of silk bolting cloth of various grades for catching the microscopic plants and animals in the water as well as the floating eggs of fishes, special bottles for collecting samples of the water at any required depth, and special thermometers, which registered the temperature at any required depth. By these means we were able to follow the changes from spring through summer to fall, both from the fresh water in the river at the head of the harbor out to the open gulf, and also from the surface to the bottom in the deepest part of the water. We obtained, therefore, very complete knowledge concerning the occurrence, food, movements, spawning and development of the important fishes of the region. It is one of these whose history we propose to relate to you in very brief form.

This fish, which we call the plaice, is one of those curious flatfishes (you are probably familiar with one of them—the halibut), which have both eyes on one side of the head, usually the right, and swim with the other side, white in color or nearly so, down. The plaice is smaller than the halibut, its maximum weight being about seven pounds, but it is very abundant along the whole coast from Cape Cod, Massachusetts, to the Strait of Belle Isle at the north of Newfoundland. It seeks the coldest water it can find, which is usually between twenty and one hundred fathoms in depth, and it remains near the bottom.

The area of the bottom between these levels is very great, amounting to more than 70,000 square miles off our Canadian coast alone, and not including that off Newfoundland and the New England States, which is even more extensive. This vast area has resulted from the sinking of the land in past ages, the former edge of the continent being now beneath water and a hundred miles or more from shore all along the coast. The old river beds can still be traced; for example that of the St. Lawrence traverses the gulf and passes out through Cabot Strait to reach the edge of the continent at a depth of more than three hundred fathoms below the surface and at a distance of more than two hundred miles from the coast of Nova Scotia.

It is then no wonder that of the cod, which also inhabits this part of the bottom of the sea, a quantity amounting to about two million hundredweight is taken annually by our fishermen. The plaice is not so abundant as the cod, but should furnish us with at least from five to ten million pounds each year, that is, practically as much as the most productive of the fishes of the Province of Ontario; and yet not more than a few hundred pounds are being used at the present time. Millions of pounds are being caught by the line fishermen and thrown away, so far as we know only the steam trawlers making any use of them.

In the Gulf of St. Lawrence we found the plaice only in water deeper than twenty fathoms, where the temperature even in the middle of summer was below the freezing-point of fresh water (salt water does not freeze until a lower temperature is reached.) They spawned during May and June and the delicate transparent eggs about one-tenth of an inch in diameter, floated up into the warmer surface water, where development took place. They became gradually heavier and sank in the water, until when ready to hatch they were mostly floating at a depth of about ten fathoms below the surface. The small fry, which on hatching were only one-fifth of an inch long, remained during the day at the same depth at which floated the eggs from which they hatched, but each night they moved

to the surface. They grew very slowly, reaching a length of one inch only by the end of August. The larger they became the deeper they went into the water, until when an inch long they never came above twenty fathoms in depth even at night.

During all this time they are quite transparent with only a few spots of pigment, and though flat they swim upright in the water as there is an eye on each side of the head. But at this stage part of the head twists, bringing the left eye over to the right side beside the right eye, pigment appears all over the right side, and the young fish goes to the bottom to live, lying on its left side.

By means of the scales the age of the fish can be determined, and even the amount that each fish grew during each year of its life can be calculated. On the scale can be seen many fine lines which are close together when the growth is slow and far apart when the growth is rapid, so that we can trace on the scale the succession of spring, summer, fall, and winter for each year of the life of the fish. In the spring and early summer it grows rapidly, in the late summer and fall more and more slowly, and in the winter growth practically ceases. By this means we have found most extraordinary differences in growth—a fish in the cold waters of the Bay of Islands, Newfoundland, reaching after six months' growth a size not as great



Canadian Plaice.

as that attained by one from Passamaquoddy Bay, near St. Andrews, in two years. The amount of growth is seen to depend to a large extent upon the temperature, and each place shows a characteristic rate.

An analysis as to age of lots of plaice from different regions showed surprising differences in the proportions of the various ages and in the number of ages represented. It was possible from this information to calculate the probable death rate of the plaice in each region. The fish in Passamaquoddy Bay in spite of their rapid growth die off so rapidly (50 per cent. per year) that individuals more than six years old are extremely rare and no very large fish are found. In the Gulf of St. Lawrence on the contrary, although growing slowly, they do not die very rapidly (only 12½ per cent. per year), so that individuals twenty-four years or more in age are found and very large fish are quite common.

We have considered the effect that fishing will have on the proportionate numbers of the various ages. If 25 per cent. of the fish present are caught each year—and this is not an improbable percentage—the effect will be to change the condition in the Gulf of St. Lawrence almost to that in Passamaquoddy Bay, that is, the members of the older and larger fish will be

greatly diminished, and as years go by the average size of the fish caught will become smaller and smaller, until finally large fish will be extremely rare and the catches will consist almost wholly of fish of the first two or three of the years of age that are marketable, and this is inevitable because of their very slow growth.

It is probably quite apparent to you that, in the sense in which we have used the word, the histories of the fishes in which you are directly interested have not yet been written. That this should be done you will all agree, and already we have heard questions that have been troubling you and that might be settled in this way. Why have herring been so abundant recently at one end of the lake? Are the small herring that are taken in a certain part of the lake merely a variety that grows no larger, or are they the young of the common herring? The investigations necessary to answer these questions appear to present no special difficulties.

We are confident that by the use of methods similar to those that we have employed for the plaice it will be possible to determine for your whitefishes and herring, why they are to be found in certain localities only, what places are most suitable for the development and growth of the young, how fast they grow, when they become marketable, and what their rate of death is. Until these and similar questions are answered you will be working in the dark, not knowing what becomes of the millions of fry that are planted yearly, not knowing at what ages the various fishes can most profitably be caught, and not knowing what prospects there are for increasing the stock of fish.

GILL NETTING IN SALT WATER.

The Canada Food Board has been making enquiries as to the feasibility of gill netting through the winter season with lake tugs and gear, out of Atlantic ports.

It was thought by the Fish Section of the Board that profitable employment could be found for lake fishermen through the winter months and the productions of fish materially increased by bringing the lake tugs down from the inland waters to Atlantic ports.

In answer to enquiries made by the Food Board from the Gloucester Board of Trade, Gloucester, Mass., a port where a considerable fleet of gill net tugs are employed we have elicited the following information:—

1.—Average size and horse-power of tugs employed?

Our smallest tugs are about 20 tons, the largest about 83 tons, and the average of the 26 tugs now engaged in that fishery being something larger than 50 tons.

2.—Size of mesh and length of gill nets used? "Practically all of the nets have a 6" mesh, while the length is 60 fathom, and the height from leads to floats 7½ to 9".

3.—Whether twine or cotton is used, and weight of leads?

Linen thread is used and the leads weigh from 7½ to 8 ounces.

4.—Variety and average quantity of fish caught and duration of voyage?

This depends entirely upon the season of the year. During the fall the catch is largely pollock. During the winter few codfish, and in the spring it is haddock. Very few of the tugs engage in the gill netting industry during the summer. If the weather permits daily voyages are made, the tugs going out early in the morning, pulling the nets, setting others and returning during the evening. The catch of course, varies largely with the number of nets set by each tug, and the plentifulness of the fish. In former years, tugs have landed 15 to 20,000 lbs. in a day, but this last season has been very poor, and 7,000 lbs. was about the largest trip landed this winter. Owing to the severe weather the receipts have not been in large quantity during the past winter, and high prices alone have prevented a general failure in this line."

5.—Number of hands carried and system of remuneration, whether shares or wages?

The number of hands carried varies according to the size of the tug, but is usually not less than five (5), nor more than ten (10). Practically all of the fishermen fish on shares, with the exception of the engineer and fireman, who are on wages.

6.—Are these vessels housed in forward for winter fishing?

Yes.

7.—Is gill netting in salt water a successful method of fishing?

In this connection I believe it fair to say that on the average it has not been a large success. This fishery started here first about nine years ago, and at the first was quite successful. About the third year there being more than forty (40) tugs engaged, this number being reduced to twenty-six (26) at the present time. Of course, the success depends upon the prices, the size of the schools of fish running, the weather and matters of that nature. Some have made good money, while others have made very little, or nothing, but on the average I believe it can be truthfully said that gill netting has not been a large success financially."

While it appears that gill netting in salt water has not been a financial success, yet conditions may be such by the fall of this year that increased production of fish will be necessary and the market may be remunerative enough to offer good inducements for the lake tugs to enter the fishery for the winter.

This bulletin is for the purpose of giving the fishermen the information obtained, and also to give an opportunity of preparing for salt water fishing should the necessity arise, and the market call for a greater production than at present.

Fresh mackerel will soon be in the market. The Southern seining fleet is busy combing the waters off the Virginia Capes for specimens of this valued food fish, and the landing of the first mackerel of the season is to be expected at Fulton Market, New York, almost any day now.

Lunenburg Activities

By AGNES G. McGUIRE.

The annual drama is being enacted on the waterfront in Lunenburg, with the personnel of the cast about the same as last year. There are, of course, some changes, some of the men going overseas, some staying home for one reason or another. The men, however, who comprise the crews of the fleet as a rule stick pretty closely to the calling, ever bearing in mind the day when they will be masters of trim schooners and add their names to the list of fish killers.

Three of the fleet have baited and sailed, the General Haig, Capt. Emil Mack; M. M. Gardner, Captain Newton Backman, and the Clintonia, Captain Abraham Cook. They baited with squid from Provincetown, Mass. Three carloads having arrived for W. C. Smith & Co., and also for Zwicker and Company.

Among the vessels ready for baiting with the latter firm, are the Elsie Hart, Corkum; Uda A. Corkum, Corkum; Lilian Corkum, Corkum; Lauretta Frances, Spindler; Ada Westhaver, Westhaver; Doris Corkum, Corkum, and Hermada, Diehl.

The newest thing in Lunenburg fishing circles is the fine new knockabout schooner, General Haig, the first of her type ever built here, launched from Smith & Rhuland's yard for Captain Emil Mack.

It will be remembered that Captain Mack was the first to introduce the semi-knockabout type here, which was so universally approved, that the style has been since generally adopted for the fishing fleet.

The dimensions of the Haig are, 136 feet over all, 26½ feet beam, and 11 ft. 6 in. depth of hold.

The schooner will have the last word in modern im-

provements and conveniences, and will no doubt give as good an account of herself as her predecessors, under Captain Mack's skilful guidance.

Judging from the samples handed out by the weather clerk to landsmen it seems, on the face of it to be sheer folly, for vessels to sail for the Banks this early in the season, especially when they come home in the early fall and are moored in port through weeks of beautiful summer weather. The Nova Scotia summer, and particularly the Lunenburg summer, often runs to October. But it is not given to the land lubber to understand the psychology of the matter and criticism appears entirely superfluous, as incidents of a similar nature occur each year.

There is, however, one thing the land lubber can estimate, and that is the loss of gear and dories, and what is far more serious, sometimes the loss of a life, when men try to pit their puny strength against the fury of the March gales, but knowing all this, they are willing to take a chance. As the wife of a successful captain says of her husband, "When the days get a little longer, and the March sun shines bright, he seems to be like one possessed." No doubt many wives can endorse that remark, it seems to express the matter in a nutshell.

I do not remember of telling the Canadian Fisherman of one of the very best organizations for the benefit of our fishermen, that known as The Lunenburg Fishermen's Relief Association, which has been in operation since the year 1913.

During the winter of that year, discussions were held along the water front, as to the possibility of



The Chicago Halibut Delegates at Marshall Fields— They all shopped at the same counter.

Conditions in Salmon Canning Industry of British Columbia

Preparations for the packing of salmon for 1918 are well under way on this coast, and much activity up and down the coast is being displayed. With the exception of a few canneries on the Fraser River, all the salmon canneries in British Columbia will be operated this season. Some of those on the Fraser, as usual, will close down this year, because the big year was last year, and three lean years follow.

Colonel Jack McMillan, back from the front with his honors thick upon him, will take charge of the Cassiar Cannery this year. His friend, Cyrus W. Peck, M.P., once bookkeeper at the Cassiar, is now a full-fledged Brigadier General, and fighting the Huns in France. He is the British Columbia canner who has achieved most prominence since 1914, and his success is highly popular on the Skeena River.

Estimates of the salmon pack for 1918 will vary with different canners: no one can tell what the pack will be. Last year, 1917, was what was called a big year on the Fraser River, but the big year did not materialize, but by packing all kinds of salmon, the canners put up the biggest pack in the history of the industry, 1,500,000 cases of 48 lbs. each, having a market value of twelve and a half million dollars. In 1916, the pack was a little less than 1,000,000 cases. There seems no reason, with prices ruling high and labor fairly normal, that a pack of a million and a half cases should not be put up in 1918, but the percentage of sockeye will be lower than in 1917. The great pack of 1917 was the result of increased effort on the part of the canners to meet the demand for increased production. The canners in British Columbia are prepared to put forth similar efforts in 1918.

In 1917 opening prices for canned salmon were quoted as follows:—

Sockeye Pound Flats	\$12.00 per case.
Sockeye Half Flats	\$14.00 per case.
Pink Talls	\$ 7.00 per case.
Pink Half Flats	\$ 8.25 per case.

The first sales of 1918 (before the pack is put up) were made at the following prices:

Sockeye Pound Flats	\$13.00 per case.
Sockeye Half Flats	\$16.00 per case.
Pink Talls	\$8.00 to \$8.50 per case.
Pink Half Flats	\$9.50 to \$10.00 per case.

Thus, already, the prices for the finished product of 1918 have gone above the opening price of 1917 very materially; this will result in the stimulation of production, and every salmon that can be caught in 1918 will be canned.

These opening prices for 1918 may appear high, but the costs of material have risen since 1917, and there is some difficulty in getting nets even at increased cost. The fishermen were paid extreme prices for their catches in 1917, and will not be satisfied with less this year. Competition was keen among the canners, and will not be less keen in 1918, and the objective will be a high price for the finished product.

Tin plate is now arriving on the Pacific Coast, and more is en route. Nearly all the salmon canners are

buying their tin plate through the agents of United States Steel Products Co. of Pittsburg, and have been definitely assured that all their requirements will be met this year. The canners are paying \$8.50 per base box of 200 lbs., plus 32c. for extra cost of labor and pig tin. An Order in Council was passed on March 23rd, by the Canadian Government whereby the War Trade Board was authorized to buy the tin plate for all Canadian canners at the price approximating to the price at which it is sold to the United States canners, viz., \$7.75, and to distribute it among the canners. Most of the British Columbia canners are bound by contracts, and this action of the Canadian Government may not benefit them now nor until their contracts expire unless the United States Steel Products Co., see fit to rebate their customers in view of the Government's action. At any rate, canned salmon being a perfect package of wholesome food, capable of easy, sure and long transportation is viewed as an essential war provision for which governments, both Canadian and the United States, are a unit in agreeing that every effort should be made to provide tin plate for the container. When any other food stuffs using tin plate as a container must be eliminated, it seems evident that canned salmon will be provided for. Tin plate will not be forthcoming in time and in needed quantities to take care of the canned salmon pack of 1918.

Many of the salmon canners already have their supply of tin plate, and are now making their own cans for the 1918 pack. The salmon canning industry of British Columbia is highly organized, heavily capitalized with money and brains and directed by keen business men whose success is due to their foresight. In plant and equipment, nearly \$25,000,000.00 are invested in the salmon canning industry in British Columbia. Several companies expend more than \$1,000,000.00 every season before a single fish is caught. They may be depended upon to see that an adequate pack is put up, and that every essential material to its production is in hand.

It is a perennial incident of the salmon canning industry that labor is short, yet large packs are put up. There was a shortage of labor in 1916, it was greater in 1917, yet half a million more cases were put up in 1917 than in 1916. The alleged labor shortage need not bother the canning industry. At the price received by the salmon fishermen last year, which will likely be again demanded by them this year, there will be plenty of fishermen to catch the fish, though not all of them will be experts. Labor shortage in the salmon canning industry is overcome by giving the fishermen high prices for their fish, and that can only be done, if the canners are satisfied that they themselves will be able to get a good price in the markets of the world for their finished product. Exemptions were given to salmon fishermen in British Columbia under the operation of the Military Service Act, and though some grievances were registered by individual canners, yet on the whole the scarcity of labor has not been augmented by the administration of the Act. It may be that the war situation, as it affects Japan, may keep some of the Jap fishermen

who compose more than 60 per cent. of salmon fishermen of British Columbia, from returning for the fishing season. The average salmon fishermen may earn \$1,500 to \$3,000 for three months' work, as this is not to be sneezed at even by the Jap, in spite of the fact that his country may be prepared to Manichurize Siberia.

There is some anxiety among canners over the non-arrival of nets from Scotland, ordered some months ago, but a shipment is now on the way for their relief. Of course, without nets and equipment, the fish cannot be caught.

So far as domestic prices for canned salmon in 1918 are concerned the farmer who grows wheat for the artisan in munition factories and ship yards, needs no protection in the price he pays for his canned salmon. He has more money than he ever had before, and no one limits his prices except to raise the limit.

As a general rule he is paid high wages for his labor, or high prices for his wheat and produce, in order that he may produce the more greatly. A similar rule might reasonably be expected to be applied to the salmon fisherman and the salmon canner.

But if prices of all foodstuffs are to be fixed the salmon canners cannot put up any plea, nor at any time do the salmon canners desire special treatment. They, however, are of the opinion that perhaps domestic prices might be fixed, but the export price should be controlled by the law of supply and demand.

The argument has been advanced that the sale price of Canadian salmon in the United Kingdom, has not hitherto been regulated, and therefore, it does not appear to be logical to limit the profit which the canner can make in Canada, yet, leave the distributor in the market of consumption a free hand to charge what he likes.

As a fundamental principle, the price of raw salmon paid to the fishermen by the canners should be fixed if the price of the canned article is to be fixed. Some canners have expressed the opinion that it is premature till after the pack is put up to attempt to fix the price of canned salmon, because no one knows what the cost of materials and manufacture is till after the season is over; no one can tell if a strike will ensue; a fire destroy a cannery; or other accident retard production or enhance costs.

If the proposed prices for raw fish to the fishermen are made lower or even held stationary, dickering with prices may be a dangerous thing, and it would appear to me to be a simple matter to insist that a fishermen should sell his fish to the canner at a certain price, or he will have his license taken away. Many of the fishermen are ranchers with incomes, who fish for both fun and profit. Such fishermen, if they do not like the price or if the regulating of prices does not suit their temperament will quit and go back to their ranches. The psychology of the fishermen should not be lost sight of.

Again, fishing for salmon in British Columbia is done in many ways; by traps; by seines; by gill nets, by trawl. Each method varies in cost, so salmon caught by each method will vary in price to the canner.

Again, by custom and tradition, the different fishing areas in British Columbia have different prices for salmon caught by the fishermen, and paid for by the canners. To fix prices for raw salmon to the fishermen, one would have to conform to these tradi-

tions, and if one did, a few fishermen in one area where the price was lower than in another, might engineer a strike, as was done in the season of 1917.

The prices of canned salmon in the markets of the world are controlled by the pack of the United States. The pack of the United States is nearly 80 per cent. of the world's pack; the United States pack in 1917 was eight and a half million cases of 48 lbs. each; Canada's pack was only one million and a half cases. Seventy-five per cent. of Canada's pack is exported; twenty-five per cent. of the United States pack is exported, but the 25 per cent. of the United States pack is much greater in number of cases than is the 75 per cent. of Canada's pack.

The costs of producing canned salmon in the United States are lower than in Canada. The bulk of the United States pack is from raw salmon caught in traps and seines, a vastly more economic way of catching salmon than by gill nets, which catch most of the Canadian salmon. The cost of tin plate, twine and other essentials of manufacture are less in the United States than in Canada, therefore, any price fixed for export United States canned salmon would not be a price that might be considered fair to the Canadian canners.

Twenty-five per cent. of the Canadian pack is consumed at home by the 8,000,000 people of Canada; seventy-five per cent. of the United States pack is consumed by the 110,000,000 people of the United States. With the demand better in the United States than in Canada for canned salmon, better prices may be obtained in the U. S. than in Canada, whilst costs of production are less, hence the domestic price in the United States for canned salmon might not be a price that would be fair to the Canadian canner.

Already, considerable business has been done in the 1918 canned salmon pack of British Columbia, being confined to one or two United Kingdom importing firms, and at least one canner in British Columbia has sold his whole output for 1918 for consumption in Canada. Several of the bigger Liverpool people who usually handle a large proportion of the trade are holding off, not being prepared to do business on the terms required by the canners who now require that delivery be taken in warehouse or f.o.b. dock Vancouver. English buyers want the old form of contract, which provides f.o.b. steamer or railway cars. They will not take the responsibility of paying for salmon if shipping facilities are not available. They usually arrange letter of credit in Vancouver against shipping documents. It is considered doubtful if sufficient money is available from British banks against warehouse receipts for salmon in Vancouver. Most of the contracts for canned salmon of 1918 pack, which has been sold have contained the following clause, viz: "Subject to rules of Dominion Food Controller as affecting export prices."

The idea seems to be that the Canada Food Board may fix prices for domestic trade, and possibly for export. It is believed in some quarters that no regulations would work out satisfactorily unless prices were fixed to govern all salmon from the raw product to the canned article.

In the past there have been two different forms of contract used by the canned salmon trade, an export contract for salmon unlabelled less 2½ per cent. commission, and a contract for domestic trade for salmon labelled less 5 per cent. commission. These contracts

ply to export firms when dealing with the canners. Some of the big canners maintain their own selling organizations for the Canadian trade and carry labels. These canners operate through brokers in the various cities of Canada, allowing them, generally speaking, about 2½ per cent. commission.

However, some of the larger companies, and all of the smaller ones, have no organization for domestic sales, and do not carry labels. It is here that export brokers step in and provide labels and organization for handling this trade, getting in return a total of 10 per cent. commission, of which they have to allow their representatives in Montreal, Toronto, and elsewhere 2½ per cent. commission.

If the Allied Provisions Export Commission deals directly with the salmon canners, these middlemen will probably have to readjust their businesses. No doubt, it will be necessary for the Commission to inspect their own purchases. It would be a good plan to arrange with the export brokerage men to do this work.

No absolute position can be taken with regard to the fixation of prices for canned salmon for the year 1918. The overruling argument for the fixation of

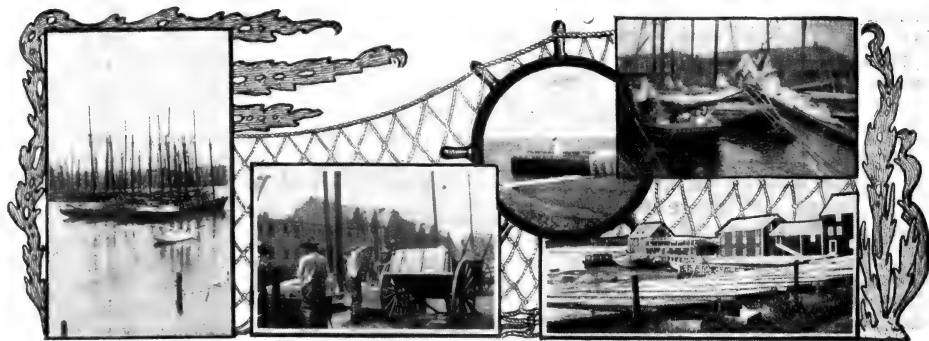
prices will be the vital need of the Allies, and in the face of that all other considerations must go by the Board. The immediate need is to increase the production of canned salmon for food. Anything that accelerates that production will meet with the approval of the salmon canning industry in British Columbia. At the same time, anything that may tend to retard production will be viewed with alarm.

Dealing with the salmon fishermen of British Columbia must be done fairly. If the fishermen are well contented and working to the limit, it might be advisable to let them and the prices of raw salmon alone, because any change in their conditions, no matter how beneficial, may be construed by some into an injury.

When the pack is put up and costs of packing established, it would not be difficult to fix a fair price to the canners for the finished product, but that price might appear high to the purchaser who will be the Allied buyers, for there is only one buyer for export in the market. He would be consoled, however, by the fact that the greatest possible production was made during the season which is the objective aimed at.



Warehouse of F. T. James & Co., Wholesale Fish Dealers, Toronto, Ont.



The Consumers in Western Canada Should Arise to the Occasion

The consumers of Canada resident in the four Western Provinces, from Victoria to Winnipeg, have an opportunity of getting the best deep-sea fish in the world at about 10c. a pound. **IF THEY WANT THEM. THEY MUST WANT THEM. DEMAND THEM OF THEIR DEALERS. GET THEM, PAY FOR THEM AND EAT THEM.**

For if the demand is not insistent from the consumers in the four Western Provinces, the supply cannot be made continuous without loss to the fish producers. The demand must be persistent and not spasmodic. The consumers must make up their minds to eat more Flat Fish and eat it more frequently. If they do this they can get Flat Fish at about 10c. a pound, and later if they keep up their consumption of Flat Fish they will get it at much lower rates.

The Canada Food Board by its regulations in regard to Flat Fish caught in Pacific waters has inaugurated one of the most important economic developments growing out of war conditions. It has been done in the interest of the consuming public in the four Western Provinces. Its objective is to make easy the substitution of fish for beef and pork and release the latter for larger shipments to the Allies who need them more than we do who are at home.

From a national standpoint the action of the Canada Food Board is epoch-making for it aims to develop a new and practically inexhaustible source of food supply in the successful prosecution of which large additions will be made to the economic wealth of Canada and wider fields surveyed for the profitable employment of capital and labor.

For all these reasons then and especially because it will help to win the war the consumers of the four Western Provinces should become supporters of the Canada Food Board Flat Fish regulations and **EAT MORE FISH. AT LEAST ONE POUND A WEEK. FOR EACH ADULT. FROM NOW UNTIL THE WAR IS OVER.**

If the demand for Flat Fish from the consumers of the four Western Provinces does not rapidly increase now and later, the Canadian Fish and Cold Storage Company at Prince Rupert may find it imperative to take off their trawler because its economic operation depends wholly on the marketing of a maximum catch. The market is to be found only among the consumers of British Columbia, Alberta, Saskatchewan and Manitoba. Transportation charges preclude the shipping

of Flat Fish from Pacific waters to any markets further east. But if the consumer in these four Provinces respond to their opportunity then Flat Fish can continue to be bought by them at about 10c. a pound.

One would suppose that the consumers of the Province of British Columbia would appreciate the possibilities of further development of their fisheries resources consequent upon the Flat Fish industry encouraged by the Canada Food Board. More than any other Province British Columbia stands to gain by the growth of this new deep-sea industry. If substantial progress is made with it as is possible while the war is on, then the markets created will still be available to capital and labor in British Columbia when the war is over.

In Vancouver the smaller wholesale fish dealers complain that under the Canada Food Board regulations relative to the marketing of Flat Fish the spread to them is about 100 per cent. greater than they ever got before. But they maintain that the fishermen who are given $3\frac{1}{4}$ c. per pound by the wholesale dealers do not get enough for their labor. It is evident that it is only a question of turnover, for while $3\frac{3}{4}$ c. for one pound is not a large sum of money it may be a large sum of money when calculated in terms of thousands of pounds. The fishermen must expect to get paid from the consumers of fish and the more consumers there are the better will he be paid, not per pound, but in the aggregate. The Canada Food Board cannot produce the consumers but it can and does create a situation whereby the consumers may get a wholesome sea food at a low price. It is up to the consumers to take advantage of these conditions and do their share in creating a market for the catches of the fishermen. The wholesale fish dealers of Vancouver should complain to the consumers that they are not doing their duty in eating more fish. That is the solution of their problem for with the increased consumption of fish the fishermen will find that they will be fairly well paid for their labor if they get $3\frac{3}{4}$ c. a lb. for flat fish. Both the fishermen and wholesale dealers would be praised by the consumers of Flat Fish in British Columbia if instead of railing against the Canada Food Board they were to co-operate and try out the effect of the Flat Fish regulations for a month or two, at the same time doing all in their power to induce the consumers of fish to consume it more largely and frequently. If at the expiration of a month or two they found that there

was not sufficient consumption of Flat Fish to justify their continuing in the business then the whole matter might be brought up for review.

The rules re prices for Flat Fish of the Canada Food Board have reference only to a certain class of fish known in the vernacular as Ground Fish, or Flat Fish or Scrap Fish. These fishes have had no appreciable market in British Columbia. Hitherto they have been caught on the hook and then cast off again into the sea, many of them to die, and the whole operation exhibiting wastefulness, not only in energy, but in foodstuffs. These fish consist of Flounders, Soles, Brills, Whiting, Red Cod, Ling Cod, Grey Cod and Skates, all excellent and edible fish, but in appearance rather repugnant to the ordinary Canadian, and because other fishes were popular, these flat fishes were disregarded.

The Canada Food Board realized that in the Northern Pacific there was an inexhaustible supply of excellent food fish that needed only to be caught, brought to shore and marketed to enable the people of Canada as far east as Winnipeg, to make a wholesome and a wholesale substitution of fish for beef and pork, in order that the two latter might be released for greater exportation to the Allies.

While it is true that these fishes were not popular to any great extent yet it is also true that in Victoria, Nanaimo and Vancouver, centres of the greatest population in British Columbia, there were many British born citizens who knew that these fish were excellent food. Many fish restaurants are to be found in Vancouver that serve an excellent fish lunch from early morning till late at night for about 40c. a head. These restaurants have increased by good service and have had several small one man or two man trawlers running out of Vancouver and elsewhere a few miles from the shore, and dragging up in their nets these Ground Fish, Flat Fish or Scrap Fish. These trawlers have sold these fish to the restaurants for from 7, 8 and 9c. a pound dressed. A good trawler in two days will catch from 1,000 to 2,000 lbs. with this trawl attached to his small gasoline launch. I know one man who operates his launch and trawl net single handed, and I have been told that selling his fish from 7, 8 to 9c. a pound to these restaurant men in Vancouver, he has been able to clear as high at \$600 or \$700 a month, after paying all expenses.

Now it is from men such as these trawlers, and there are not many of them in the lower mainland cities of British Columbia, that the objection is urged that 3½c. a pound as fixed by the Canada Food Board is not enough. If the demand is great enough it will be enough. It is for the consumers to make the demand.

It must be remembered that there will be discontent among these trawlers until they have learned to readjust themselves to the new ruling which has been instituted first to stimulate the exploitation of a practically new field of food supply. In order to get these fish to the consumer and create a market that will be permanent, it is necessary that they be put on his table at a price that will be attractive and induce him the more readily to substitute them for beef and pork which are needed by our Allies. The consumers must help.

The question arises whether the interest of small trawlers are to be considered above the interest of the householders from the Pacific to Winnipeg and of the great national duty that Canada is trying to

perform. Discontent among and refusal to fish by the fishermen of Vancouver are playing the game of those who would hamper the successful prosecution of Canada's part in helping to win this war with food.

I was instrumental in a great measure in formulating this policy relative to Ground Fish, and I had in view at the time that they could be got most economically by means of the Otter Trawl. I spent some weeks in investigating this Otter Trawl at Prince Rupert. I was impressed with the fact that the deep-sea fisheries of Great Britain were revolutionized when the steam trawler put the schooner fishing vessel out of business. Similar conditions are ripe in the Northern Pacific. The Otter Trawl will catch with luck from 400,000 to 600,000 lbs. of these Ground Fish in a month at a cost to the producer of approximately 2c. or 3c. a lb.

If these fish can be transported to the Prairie Provinces with the Government paying two-thirds of the transportation charges, as they do now, the householders in the West will be able to get as good fish as there are in the sea for about 10c. a lb., and a new source of food supply in Canada will have been discovered and used to help to win the war.

I have information from British Columbia that tells me that the British Columbia Packers' Association without any experience with a trawler is putting a steam boat properly equipped on the fishing banks off Vancouver Island in order, even though this company may lose money, that it may show the people of Canada that it desires to co-operate with the great national undertaking fathered by the Canada Food Board.

The Canada Fish Cold Storage Company at Prince Rupert has one trawler in operation called the James Carruthers, and though the first trip was not hugely successful owing to bad weather, still the trawler got 20,000 lbs. of fish in a few days, as much as all the smaller trawlers would get in a week.

The shortage of fishermen in British Columbia is not greater than it has even been, and the draft has not taken many from the ranks of the fishermen because the exemption tribunals have ruled that fishing as an essential occupation. Otter Trawling does not require expert fishermen. Two men who understand the Otter Trawl are needed, and the rest of the men on the boat are men who have hands and can clean fish, the simplest form of manual labor going. This is work returned soldiers could do handily and that interned alien enemies should be made to do, and as each fisherman on board a trawler will make from \$150 to \$200 a month with board, it is an occupation that will not go begging for men to engage in it.

The consumers of the four Western Provinces can have cheap fish if they want it under the regulations of the Canada Food Board re Flat Fish. **BUT THEY MUST WANT IT.** If the present plan does not succeed the consumers have themselves to blame.

Ingonish, C.B.,

February 11th, 1918.

To the Editor of Canadian Fisherman,—

Dear Sir—I enclose \$1.00 as one year's subscription to "The Canadian Fisherman"—a journal that is well worth the money—interesting, instructive, scientific also practical. Every fisherman, fish merchant, and fish dealer should take it.

Yours, SYDNEY S. BURKE.

FULL REPORT OF SUBSCRIPTIONS TO THE HALIFAX FUND MADE THROUGH THE SECRETARY OF THE CANADIAN FISHERIES ASSOCIATION.

Montreal, February 20, 1918.

To the Editor of Canadian Fisherman,—

Dear Sir,—I attach herewith report of the Committee on the Halifax Relief, and at a meeting of the executive held here to-day, I have been instructed to forward this report to you, and as you very kindly offered to have the report published in detail in the Canadian Fisherman, would appreciate it if you would have this report appear in full as per the attached.

It is possible that it may be too late now for this report to be published in the Fisherman, if such is the case, I would ask you to kindly have the full report printed, and a separate report mailed to each contributor whose name appears on the attached list, and before sending out the report I would like to see it.

Yours truly,

W. R. SPOONER,
Secretary-Treasurer.

REPORT OF COMMITTEE ON HALIFAX RELIEF.

At a meeting of the executive of the Canadian Fisheries Association held at Freeman's Hotel, Montreal, on December 10th, 1917, it was decided that the Association should do something as an Association towards alleviation of sufferers from Halifax disaster which occurred December 6th, 1917.

A committee composed of Messrs. Paulhus, Connors, Harpell, Stanford, O'Connor and Spooner was formed, and it was decided to forward a telegram to Members of the Association in twenty districts as well as to prominent dealers in two districts where the Association did not have members.

Result being that an amount of \$3,000.00 has been subscribed as per attached detailed list.

In addition to above, replies were received from the following:—

Canadian Fishing Company, Vancouver, B.C.
W. S. Loggie, Chatham, N.B.
R. O'Leary, Richibucto, N.B.
I. Montreuil, Quebec, P.Q.
Chas. Finley, Port Stanley, Ont.
W. F. Leonard, St. John, N.B.
W. M. Hodge, Lockport, N.S.
C. H. Earle, Charlottetown, P.E.I.
F. W. Bowan, Port Arthur, Ont.

stating that previous to receiving our wire, they, and those interested in the Fishing Industry, in their district had already subscribed through other channels, such as local Boards of Trade, or other local associations.

Upon recommendation of the Committee the amount collected, \$3,000.00, was forwarded to Sir Frederick Fraser, Chairman Halifax Blind Relief Committee, Halifax, who had made an appeal for funds to provide accommodation and suitable training for those made blind through the disaster of December sixth.

The following letter dated January 7, 1918, acknowledging receipt of the amount has been received:

January 7th, 1918.

W. R. Spooner, Esq.,
Sec'y Treas. Canadian Fisheries Association,
Room 600, Read Building,
35-45 St. Alexander St., Montreal, P.Q.

Dear Sir,—I beg to acknowledge the receipt of your very kind letter of December 31st which with your splendid contribution of \$3,000.00 from Canadian Fisheries Association was handed me to-day by Mr. S. Y. Wilson of Halifax. It is very encouraging to the Committee having in hand the Halifax Blind Relief work to find that the interest in this particular form of relief was so fully appreciated by your Association, and I can assure you that our Committee are deeply grateful for your timely and generous help.

It is impossible at this date to give absolutely accurate details as to the loss of sight due to the terrible explosion of December 6th. It is known that at least one thousand men, women and children had their eyes injured at the time of the disaster. Four hundred or more were minor injuries which did not affect the sight. Four hundred others lost the sight of one eye, and in many cases enucleation followed. About two hundred have been made totally blind or have had their sight so far impaired that they will be practically blind for life. The problem of how to care for these newly blinded people, to shelter them and to arrange for after-care and for training is one that is receiving the most careful attention of the Committee, and I think I can assure you that this

problem will be dealt with in a satisfactory and practical way.

Will you kindly, through your official organ, convey to the donors of your contribution the very sincere thanks of the Halifax Blind Relief Committee.

Very gratefully yours,

(Signed) C. F. FRASER,
Chairman Halifax Blind Relief Committee.

The Committee sincerely appreciate the generous response to this appeal by members of the fishing industry all over Canada, and recommend that this report be transcribed in full in the minutes of the Association, and that all correspondence in connection therewith be kept under separate file.

The Committee further recommend that a full copy of this report in detail be printed and forward to each subscriber at once.

(Signed) W. R. SPOONER,
Secretary for the Committee.

LIST OF SUBSCRIBERS TO HALIFAX RELIEF.

Montreal District:	
D. Hatton Co.	\$130.63
Maritime Fish Corporation	130.63
W. R. Spooner.	130.63
Leonard Fisheries Limited	280.51
Hy. Gatehouse & Son	100.00
Stanford, Limited	25.00
Jos. T. O'Connor	25.00
H. A. Letourneau	25.00
J. J. Harpell	25.00
M. Terdiman	10.00
F. W. Wallace	10.00
Portland Fish Co.	10.00
Jos. Turgeon	5.00
A. Charbonneau	5.00
Lalumiere & Beaudry	5.00
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	\$917.50

Toronto District:	
F. T. James Co., Limited	100.00
White & Co., Limited	100.00
J. Bowman & Company	35.00
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	\$235.00

Winnipeg District:	
W. J. Guest Fish Co., Ltd.	100.00
Northern Fish Co., Ltd.	100.00
Armstrong Independent Fisheries	100.00
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	\$300.00

Digby District:	
Maritime Fish Corporation	50.00
J. E. Snow	5.00
D. Sproule	5.00
Nova Scotia Fish Co.	10.00
H. B. Short	20.00
H. Anderson	10.00
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	\$100.00

Prince Rupert District:	
Canadian Fish & Cold Storage	200.00
Royal Fish Co.	25.00
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	\$225.00

Ottawa District:	
T. W. C. Binns	10.00
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	\$10.00

Canso District:	
Maritime Fish Corporation and Employees.	229.75
Maritime Fish Corporation, 5 Boat Crews.	85.00
Maritime Fish Corporation, Rayondor and crew	359.00
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	\$673.75
Robinson Glue Co., Ltd. and employees.	64.00
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	64.00
A. W. Fader and employees	137.25
A. W. Fader, 7 Canso Boat Crews.	75.00
A. W. Fader, 4 Port Felix Boat Crews.	32.00
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	244.25
Fred David and Employees	20.00
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	20.00
Portland Packing Co. and Employees.	122.50
Portland Packing Co., 4 Boats.	28.00
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	150.50
R. Hendsbee	10.00
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	10.00
Whitehead, N. S.	50.00
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	50.00
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	\$1,212.50

CANSO DETAILED LIST.

Maritime Fish Corporation & Employees:

Maritime Fish Corporation, Ltd....	\$100.00
H. F. Robinson	25.00
H. Cowie	5.00
J. J. Bancroft	2.00
Geo. T. Hendsbee	10.00
Capt. John McDonald	5.00
Capt. Geo. Walsh	5.00
Jas. McKay	3.00
Abraham George	1.00
Chas. DeCoste	1.00
Hezekiah Dort	1.00
Freeman Smith	2.00
John Jarvis	2.00
Jas. Keating	2.00
A. J. Goodger	5.00
Have Cohoon	5.00
S. Shrader	5.00
Geo. Jarvis	2.00
Frank Munroe	3.00
Harry Snow	3.00
Moses Richards	1.00
John Jarvis, Jr. ....	.50
Charlie Horne	1.50
Fred Rhynold	2.00
Roy Peart	1.00
Wilfrid Manuel	1.00
Wm. Pembroke	1.00
Hiram Horton	1.00
Annie Rhynold	1.00
Sadie Feltmate .....	.25
Goldie Feltmate .....	.25
Molly Snow	1.00
Hilda Greencorn .....	.50
Maggie Greencorn	1.00
Eliza Carrigan	1.00
Sarah Creamer .....	.50
Katie Dort	1.00
Cora Gurney	1.00
Rebecca Hearn .....	.50
Joseph Armsworthy	3.00
Jas. Dort	1.00
Edward Tobin	5.00
Nat. Gosbee	1.00
Mary A. Carter .....	.50
Brittle Feltmate .....	.25
Jane Rhynold	1.00
Edgar Dort	1.00
Albert Williams	1.00
Leslie Ehler	1.00
Covert Euloth	1.00
Chas. Jamieson	1.00
Leo Avery .....	.50
Ezekiel Snow	1.00
Jas. Scales	1.00
Martin Fultz	1.00
Mike Carter	1.00
Henry Greencorn	1.00
Louis Ehler	1.00
John Williams	1.00
John Carey	1.00
Edward Boudrout50
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	\$229.75

Boats:

Capt. Thos. Hearn and crew	\$15.00
Capt. Frank Lohnes and crew	25.00
Capt. J. Manuel and crew	15.00
Capt. Alonzo Feltmate and crew	15.00
Capt. George Ryan and crew	15.00
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	85.00

Steam Trawler "Rayondor" and Crew:

"Rayondor"	\$150.00
Capt. Knudsen	100.00
G. Halsen	10.00
W. P. Hansen	10.00
O. Carlson	10.00
Jacob Oleson	10.00
Anton Ericson	10.00
S. Anderson	15.00
Chris. Anderson	5.00
Jas. Gower	2.00
E. Jensen	5.00
Edgar Soper	2.00
H. M. Grayson	1.00

Stephen Power	2.00
Robert Morgan	2.00
Albert Morse	1.00
Joseph Thompson	10.00
Elisha Carter	2.00
Howard Goodwin	2.00
J. Skold	5.00
J. Kramp	5.00
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	\$359.00
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	\$673.75

The Robinson Glue Co., Ltd., and Employees:

The Robinson Glue Co., Ltd.	\$50.00
F. Robinson	5.00
Howard Myers	1.00
Saul Snow	1.00
Gerald Fanning	1.00
Chester Greencorn	1.00
John Carter	1.00
Pat Dollard	1.00
Walter Dollard	1.00
Harry Fanning	1.00
Mike Boudreau	1.00
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	\$64.00
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	\$737.75

A. W. Fader and Employees:

A. W. Fader	\$100.00
Everard Kelley	5.00
William Keefe	5.00
Fresns Le William	5.00
John Kavanagh	4.00
Elias Armsworthy	3.00
Wilfrid Bouchie	3.00
Chas. Bouchie	2.00
Felix Gurney	2.00
John Fultz	2.00
John Rhynold	2.00
Robert Smith	1.25
Angus Munroe	1.00
Stanley Pelrine	2.00
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	\$137.25

Fishermen:

Capt. Chas. Mosher and crew	\$15.00
Capt. Frank Hawes and crew	10.00
Capt. Samuel Mason and crew	15.00
Capt. John Boudreau and crew	10.00
Capt. Geo. Harnish and crew	10.00
Capt. David Walsh and crew	5.00
Capt. Geo. Smith and crew	5.00
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	75.00

Port Felix:

Capt. Thos. Boudreau and crew	15.00
Capt. Wm. Pelrine and crew	5.00
Capt. Hubert Doroin and crew	7.00
Capt. Wm. Uloth and crew	5.00
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	32.00
Fred David and employees	20.00
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	20.00

Portland Packing Co. and Employees:

Portland Packing Co.	\$100.00
P. T. Smith	5.00
A. J. Keary	3.00
Jeff. Boudreau	2.00
Chas. Dort	2.00
Mike Rice	2.00
Claude Rhynold	1.00
Harold Horton	1.00
Albert Dort	1.00
Duffield Boudreau	1.00
Matthew Armsworthy	1.00
Wm. Snow50
Wm. Boyd50
Edgar Boyd50
Geo. O'Brien	1.00
Louis Snow50
Howard Bond50
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	\$122.50

Boats:

J. R. Lumsden and crew	15.00
S. Hurst and crew	5.00
Angus Munro and crew	5.00
S. Barss and crew	3.00
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	28.00
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	\$150.50

Whitehead, N.S.:

J. S. Wells, Ltd.	\$16.00
Victoria Wells	1.00
Wm. Wells	1.00
Samuel Duncan	.50
Malcolm Duncan	.75
Mrs. Thos. Feltmate	.50
Levi McDuff	.25
John Dort	1.00
John Whalen	1.00
Thurlow Munroe	1.50
Samuel Porter	1.00
Sydney Grover	1.00
Joseph Uloth	.25
Sydney Grover, Jr.	1.00
Mrs. Chas. Duncan	.50
Mrs. Jas. Duncan	1.00
Wm. Feltmate	.50
David Duncan	1.00
A Friend	.50
Mrs. John Grover	.50
A Sufferer	.25
Joe Grover	.50
J. W. Roberts	1.00
Ruffus McKenzie	.50
Thos. Feltmate	.50
Thos. Grover	.50
Ernest Grover	1.00
W. S. Harris	5.00
Samuel Casey	.25
Clifford Haynes	1.00
John Fitzgerald	1.00
A. E. Dillon	.50
Howard McMillan	.50
Edward Conway	.75
Jas. Conway	.50
Jas. Grover	.50
Valentine McDonald	.50
Duncan McDonald	.50
E. H. Munroe	.50
Matthew McDonald	.50
Wesley Munroe	.50
Louden Munroe	1.00
Martha Feltmate	.50
Bertha Feltmate	.50
Harvey Munroe	.50

Summary:

Maritime Fish Corporation, Ltd.	\$673.75
The Robinson Glue Co., Ltd.	64.00
A. W. Fader	264.25
Portland Packing Co.	150.50
White Head	50.00
R. Hendsbee	10.00

\$1,212.50

Summary:

Canso, N.S., District	\$1,212.50
Montreal, Que., District	917.50
Toronto, Ont., District	235.00
Winnipeg, Man., District	300.00
Digby, N.S., District	100.00
Prince Rupert, B.C., District	225.00
Ottawa, Ont., District	10.00
Total	\$3,000.00

TREASURE UNKNOWN.

If any person were to publish broadcast the statement that knowledge had come to hand of a treasure, yearly increasing, a portion of which might be had for the taking, would there be interest enough aroused to start an expedition for the garnering of that treasure?

There is such a treasure, daily being lost to Canada in the great waters where the fishermen pursue their calling, and almost, all of it could be conserved for National benefit.

Since the pioneer days, when in their tiny vessels the fishermen, wholly unaided and unnoticed, fared forth each day to their arduous task, this waste has been going on. It escaped notice for many years, until the fishing industry having reached its present proportions in the commercial life of our country the

thought comes that if the waste were eliminated, the receipts of the fisheries would increase, therefore all of the other industries depending on the fisheries for their existence would increase accordingly, and the benefit to the nation as a whole would be colossal.

The fishing industry in Canada approximates nearly thirty-six millions of dollars yearly. The waste approximates three times as great a sum, because in packing lobsters, salmon, etc., only one-fourth of the fish is fit for human consumption, the other three-quarters are **Waste**, and in the case of other fish the amount of waste is even greater. Both on land, in the canneries and at sea, in the deep water and lake fisheries, Canada is yearly losing a large amount of money. There is no more need for this waste than there would be to take millions out of the revenue and cast them into the sea. Following the intricacies of the food question, let us see what connection the fisheries waste has in its solution. It is a practical idea that greater production means a lessening of anxiety in the apportioning of Canada's food supply. There is a scarcity of fats, as well as of both beef and bacon. With grains, etc., at their present prices, poultry cannot profitably be kept, neither can the consumer afford the prices for what quantity is available. This condition is due to the fact that it has not been realized that Canada needs those wasted millions, "under water," as never were they needed before.

From fish waste valuable oils can be extracted, which can be used in many industrial manufactures, such as the soap, lubricating oils, glue, leather, paint and other trades. All of these trades have been importing such necessities from foreign countries, which means that besides the enormity of the waste in the fisheries of Canada, yearly increasing, money from all of those trades has been pouring out of Canada which could and ought to have been kept at home.

After the extraction of oils has taken place, the residue of fish waste contains protein and other essentials necessary to the farmer for the feeding of live stock and poultry on our farms, as well as that, even after stock food has been manufactured, the "leavings," will make better fertilizer than any now on the market, because of the many chemical properties that it will be found to possess. The farmer dwelling near the coast, may get all the kelp and seaweed he needs as fertilizer. But the farmer of the interior, his stock depleted, as the records show, depends on manufactured fertilizer, and because of the growing scarcity of bones, etc., used in this industry, there is going to be a shortage in this line. This shortage will mean fewer root crops, such as potatoes, etc., and other vegetables, staple foods of the nation.

The machinery for the conservation of fish waste is not expensive. Without intending to be humorous, the need of more **hogs** is greatly felt at the present time, as well as of all sorts of live stock. If the food-stuffs now cast away were available, Canada's resources would soon be on the increase. The other industries now sending money out of Canada would do better by keeping it at home, and the fisheries wealth, already more than half of the commercial life of Canada, would assume giant importance. There is need for serious consideration of applicable means to bring those wasted monies into the National coffers, because we need **all** of our resources to back up our gallant brothers, who stand between us and **Hun** brutality.

BILLINGSGATE MARKET.

London, March 2nd, 1918.

With no improvement in weather conditions at sea, but rather the reverse, there has been if anything an even greater scarcity this week. Arrivals at the West Coast ports, particularly Fleetwood, have brought heavier catches than those reaching Grimsby, Hull, North Shields, Aberdeen and other ports on the Eastern seaboard. Demand for all varieties has probably never been keener, the coming into force of the meat rationing scheme in London and the Home Counties, affecting millions of people, has resulted in a huge demand for fish from the areas affected by the Ministry of Food rationing scheme. This has had the effect of practically every ounce of fish landed at the fishing ports being eagerly snapped up, the restaurants and similar caterers being big buyers. As the maximum prices now in force do not extend to fish sold ready cooked, buyers for the catering trades have in many cases willingly paid more than the legitimate dealer in fish is allowed to sell his goods at, and merchants supplying inland fish salesmen and retail fishmongers have been at their wits end to obtain supplies and at the same time keep within schedule rates, let alone secure a slender margin of profit. If one has sold more freely than another it is cod; probably this is largely attributable to the Lenten demand, as old customs die hard. In former years there has been a certain quantity of "pickled" cod on offer at this season, and the absence of such fish this year is no doubt responsible for the great inquiry for fresh cod. So keen has been the demand, that leading salesmen in markets such as Billingsgate have been compelled to apportion their supplies among their customers to the best of their ability.

Herrings have been marketed in fair quantities from the various centres off the Scottish coast where the herring fishing is now being prosecuted, and have cleared rapidly at high figures, and kippers and bloaters have been correspondingly expensive.

The scarcity of fish from home waters, coupled with the big demand, have had an encouraging result to those firms which have long advocated the merit of frozen fish from Canada. In addition to cod, fresh haddocks and flatfish, Mr. Peter Forge, the agent at Billingsgate for the Ministry of Food, has had on offer frozen skate wings. As fish of this kind meets its greatest sale among fish friers, few of whom are in a position to buy a case containing at least 200 lbs., and in some instances as much as 250 lbs., at a single purchase, Mr. Forge has been selling this fish in stone lots, the fixed price being quite reasonable. Friers have shown great appreciation, the quantity disposed of increasing daily. In fact, it is not too much to say that on some days this week, the fish has been the frier's salvation, practically no other fish suitable for this trade being obtainable. With every probability of the food question in this country becoming more stringent, there is little doubt that Canadian frozen fish has a great future before it, especially if exporters on your side heed the hints which have been given in these notes from time to time regarding the size of package, selection and grading of the fish, and similar matters. The great point always to remember is that a satisfied customer is the best advertisement for any commodity, and this is especially true of foodstuffs.

At a mass meeting of fish friers held at Billingsgate Market last Monday, Mr. H. G. Maurice, C.B., the Sec-

retary of the Fisheries Division of the Board of Agriculture and Fisheries — the Government Department charged with the administration of the Fisheries in England, the premier fishing country in the world — emphasized the vast importance to this country of its fisheries as a source of food supply, an importance which would grow in the very near future, when the country would have to live, so far as meat or meat substitutes were concerned, very largely if not mainly on fish. Although these remarks were addressed to those engaged in the fisheries in the Homeland, they bear a message to those in the Dominion who are in a position to increase our supplies of fish food.

London, March 9th, 1918.

This week's business has been very similar to that of previous weeks; general supplies fair, comparatively speaking, a tremendous demand for all kinds, and prices for most kinds at or near the maximum allowed. Compared with other kinds, cod has been rather prominent and has met a great demand, while plaice, too, has been fairly plentiful. As the week progressed supplies of herrings improved, but with trade very active prices had no chance of receding; some Norwegian herrings were landed at one or two East Coast ports, but they were mostly inferior; despite this they commanded a lot of money, prices being far above the intrinsic value of the fish. All kinds of smoked fish at maximum level.

The Ministry of Food Canadian frozen fish is meeting with more appreciation weekly; in fact, it is scarcely too much to say that this week, so far as Billingsgate is concerned, frozen skate wings have been almost the salvation of fish friers. Unfortunately, the size of the packages in which this fish is marketed militates against its sale; no frier requires more than 14 stones of frozen fish at one purchase. To meet the difficulty, the Government agent at Billingsgate, Mr. Peter Forge, has been disposing of the fish in stone lots. This necessitates much unnecessary labor. It is to be regretted that the quality of this fish varies greatly; the best is excellent, but the least said about the other qualities the better; then again, the stencilling on the cases is unreliable; sometimes the contents are entirely at variance with the name marked on the case. Further, the cases are not standard size, in addition to being too bulky — some contain 225 lbs., some 200 lbs. and others 175 lbs. All this tends to mystify the trade. The great point for Canadians to bear in mind if they are desirous of fostering this fish export trade is to instil confidence; the great American frozen meat companies have recognized the necessity of this, to the advantage of all concerned. It will be absolutely fatal to the trade if inferior or stale fish are frozen; refrigeration does not make bad fish good; at the most it merely arrests deterioration.

London, March 16th, 1918.

Our fish markets this week have been characterized by several unusual features. In the first place, aggregate supplies have been generous, the quantities received at some of the principal consuming centres being quite equal to, and in one or two instances in excess of, those available in pre-war days. Secondly, the abundance has chiefly consisted of one or two varieties, such as herrings, deep-sea cod, coalfish and similar kinds.

Then, unfortunately, the bulk of the sorts most in evidence have been in anything but the best of condition, unavoidable delays in transport combined with a burst of exceptionally warm and sultry weather for the time of year, being responsible.

This had the inevitable effect of bringing prices down with a run, not only for the particular kinds which were most prominent, but more or less generally. No trade is so sensitive in this direction as the fish trade; depression in one section reacting on the other kinds and depreciating values all round.

While general landings have been liberal to a degree, several ports have reported light landings. Truly the fish business is an enigma, and it occasions no surprise that the authorities are apparently finding it no easy task to formulate a comprehensive scale of controlled prices.

Billingsgate, the leading fish distributing centre in the world, and a market used to dealing with gluts, has found its energies taxed to the utmost by an almost super-abundance of herrings, and as the result of the depression in prices, heavy losses have been incurred by many firms; how heavy it is impossible to estimate.

Grimsby has had the unusual experience of receiving substantial consignments from other ports; here there has been a marked scarcity of haddocks. Hull has reported heavy landings of rough quality fish from the deep-sea and distant grounds, but only fair deliveries of best quality fish from the nearer fishing banks.

Milford Haven has recorded unusually generous catches of whittings. Fleetwood's supplies have been pretty liberal from both the home and distant waters. Excepting on one day, the catches landed at Aberdeen have not been unduly heavy, but this has to some extent been compensated for by arrivals overland from the smaller fishing centres on the Scottish coasts.

As an indication of the remarkable fluctuations in values, it may be instanced that Herrings have sold as low as 20s. and as high as 110s. per barrel on the same day, difference in quality being responsible for the wide range.

Frozen cod, fresh haddocks, flatfish and roker wings, marketed by the Ministry of Food, are increasing in favor, but to place this trade on a sound basis greater care must be exercised in selecting, grading, stencilling, and weighing, all of which are quite unreliable, while it is absolutely essential that a smaller, and therefore less bulky, package be employed.

London, March 23rd, 1918.

Trade on the whole has remained quite brisk this week, with prices for most kinds firmly maintained at their recent level. The most plentiful kinds have been plaice and cod, and these varieties have been obtainable from time to time at comparatively easy rates. Coalfish, too, has been in generous supply, especially at Fleetwood and Hull, while at Milford Haven whittings have been most prominent. Fewer herrings have been available, especially really best quality fish, but following the glut in previous weeks, kippers have been abundant, second rate being passing cheap as things go now-a-days.

In ordinary years the week preceding that known as Good Friday week is usually an awkward one in the fish trade in this country. Next week, under normal circumstances, would be the week of the whole year, and the fishing vessels would as far as possible ar-

range their trips so as to arrive in port one day during that week. As it is, however, demand is so insistent that there is little room for expansion, while with a new system of controlling prices coming into force on Monday rates cannot rise much, while several sorts must be lower so far as the wholesale figures are concerned.

Inquiry for the frozen fish marketed by the Ministry of Food fluctuates from day to day according to the quantity of fish from home waters available, but it is steadily gaining a place on the markets, some fishmongers and fish friers regularly placing orders with the Government Agent. Inquiries are being received from all parts of the country for frozen salmon and frozen halibut, which it is impossible to satisfy.

Under present circumstances the nation can consider itself fortunate in that regular supplies of fish are forthcoming.

London, March 30th, 1918.

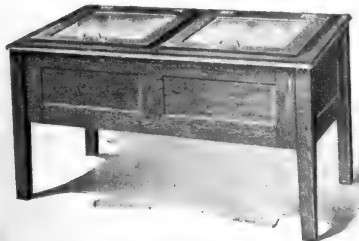
To-day has witnessed the close of the most extraordinary week's trading that has ever been experienced by the present generation. In the ordinary course, the landings during Good Friday week are usually on a generous basis, every endeavour being made to time the arrival of as many vessels as possible, and on the Wednesday preceding Good Friday, what has come to be known as "Show Day," takes place at the principal fishing ports, such as Grimsby, Hull, Fleetwood, Aberdeen, North Shields, Milford Haven, Swansea, etc. This year landings all the week have been woefully inadequate to requirements, the already keen demand being, if possible, accentuated by the nearness of Easter. Then, on the other hand, this week has seen the coming into force of a new Fish (Prices) Order, by which the prices are controlled from the point of landing to the consumer. Thus, the unparalleled position has arisen of crowds of buyers bidding the one price—the maximum—for a supply quite insufficient for more than a tithe of their orders. Various expedients have been resorted to ensure all having a share, such as drawing lots, tossing coins, etc., but the general result of the schedule rates coinciding with the Easter demand and scanty supplies has been a general muddle. Thus it is quite impossible to compile a market report in the ordinary sense of that term. Many contend that the best antidote to exorbitant prices is not controlled prices, but increased supplies, and this opinion has received ample confirmation by this week's experience when chat haddocks have been the only kind at all abundant, and these have been obtainable at auction well under the maximum. Strong pressure is being placed on the authorities to release as many vessels as possible, consistent with national necessities, and to increase the areas available for fishing.

With the great scarcity in fish from home waters demand has expanded for the Ministry of Food Canadian frozen fish, especially from fish friers. Unfortunately, the quality of much of this fish is quite unreliable, which it is to be regretted, as it is next to impossible to induce a fishmonger, or his customers, to give the fish a second trial once the quality has been found to be inferior.

The following prices must not be exceeded for sales of frozen fish by wholesalers:—Halibut, headed and trimmed, 21s.; salmon, including grilse, 26s. 6d.; ditto, headed, 28s. per stone.

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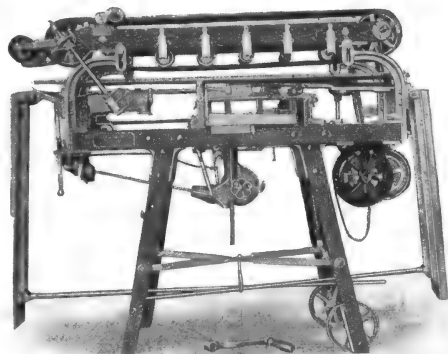
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A FISHERMAN'S ENGINE.

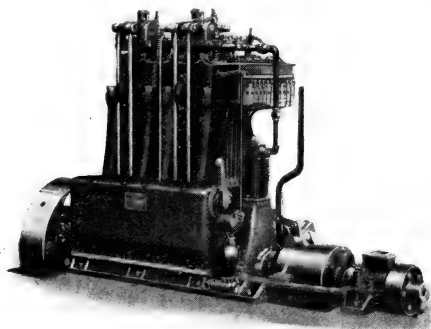
By B. J. STANTON, Burnoil Engine Co.

All recognize the fact that steam engines have low thermal efficiency, in other words, are extremely costly to install and operate and take up more space in a boat than is required.

Users of marine engines are looking for a power plant that will give continuous service under severe conditions with a minimum of repair and delay, turning to the internal combustion oil engine to improve the situation. The high price of fuel and the large consumption of the gasoline engine is another cause for the user to seek further relief.

The solution of the problem is the oil engine, which consumes less volume of fuel than the gasoline engine or the so-called gasoline-kerosene engine and many authorities claim that no gasoline engine working with the carburetor and ignition system can burn kerosene successfully, and it always requires a supply of gasoline on hand that is more or less an element of danger and bother.

The Diesel Engine came with a great promise. Its principle of operation was a great step in advance, but its complicated methods of applying this principle in a great measure defeats the victory gained and a step nearer the ideal must be taken before the internal combustion engine can come into its rightful position as a



new and higher standard of power, for classes of trade such as the fishing industry.

There now comes to the front a type of oil engine that is strong in the methods that are diffident in the steam, gasoline, Semi-diesel and Diesel. We speak now of the Burnoil Engine, built by the Burnoil Engine Company of South Bend, Indiana, and sold in Canada and Newfoundland by the Pyke Motor and Yacht Co., Montreal, whose announcement appears in the advertising pages. This engine has been manufactured in European countries for about seven years and has been used very extensively by the fishing trade, owing to its simplicity and ability to operate on the cheaper grades of fuel oil.

These Burnoil Engines may run indefinitely at slow speed as they have no hot parts to crack or cool and cause misfiring and may be speeded up instantly to full load. They also eliminate the carburetor, magneto, electrical equipment of any description, blow torch, pre-heating and gasoline. They start and run on one and the same fuel increasing its value as a type of engine that meets the heavy duty, severe service of

marine conditions. Fishermen want engines free from delicate parts or a type that will run with little skilled attention but the internal combustion engine, using carburetor and electrical ignition system, we all know is not free of complications.

In marked contrast the Burnoil type, aside from the standard moving parts, exclusive of the carburetor and magneto, has only one additional moving part, namely a poppet valve to open and let the oil flow in by gravity, the operation of which is shown by the accompanying cut.

The essential patented features of this engine relate to the method of introducing the oil and are very simple as will be seen from the illustration. Fuel from a supply tank is fed by gravity through a pipe to inlet (D) past valve (B) to seat of fuel valve (A), which is opened under the intake stroke admitting the required amount of fuel to the bottom of the fuel cups (C) extending down into the cylinder.

During the compression stroke the heat created by the compression of the pure air in the cylinder will be transmitted through the walls of the cup, vaporizing part of the fuel inside the cup, at the same time a little hot air enters the fuel cup through small holes (F), so that the vapor at the end of the compression stroke will ignite and cause a little explosion, the force of which will spray the still fluid main part of the fuel through the small holes (F) with terrific force into the cylinder where the main combustion then gradually takes place.

The amount of fuel allowed to the cup is controlled by a governor operating the level (G) up and down, thereby measuring the quantity being required for the immediate load. It should be noted that pure air only is taken in the cylinder and compressed to such a high heat that the degree of temperature of the atmosphere outside the engine has no effect on firing.

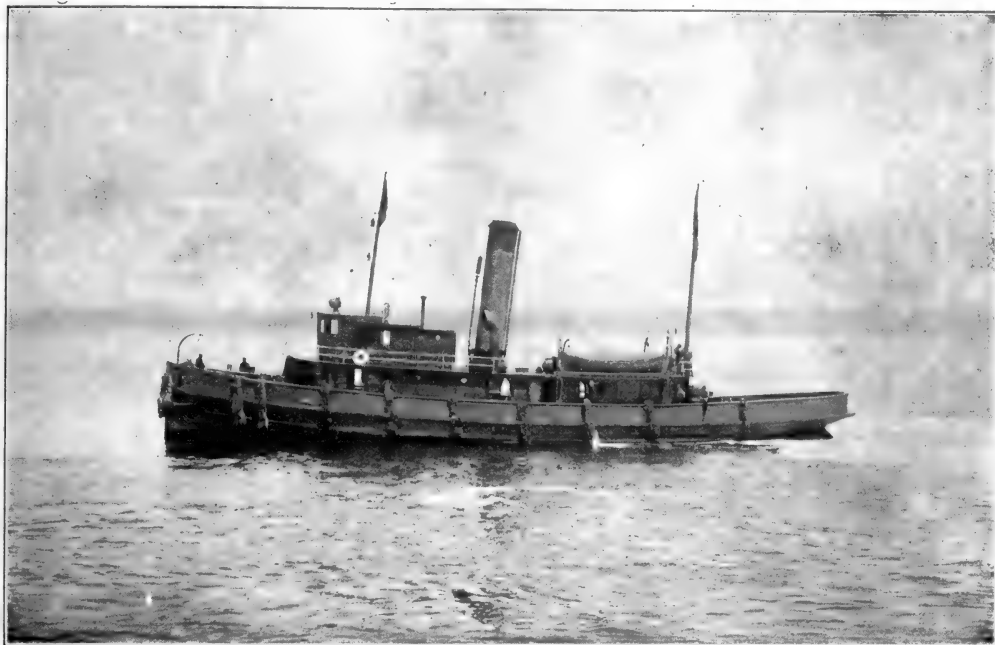
The reverse gear, an extremely important factor for the commercial engine is well taken care of in this engine and consists of one movable compound gear between the driving and driven elements. This is a large external and internal toothed gear that works between the stationary drum and a driving pinion on propeller shaft. The gears are what are called internal gears and fit within each other perfectly, which gives from three to four teeth bearing at all times and permits of extra large teeth in the gears, giving more efficiency and life to them.

The propeller shaft telescopes clear through the shell of gear and gives perfect alignment. The expansion ring is reinforced in such places as to give perfect friction bearing surface at all times, no matter how old and worn they become.

The fuel consumption of this engine is another important factor, for instance a 12½ B.H.P. Marine Engine of this make has been running for over a year without any repairs and costing less than 1 cent per mile fuel and lubricating expense.

Mr. F. E. Payson, formerly with the Western Packers, Ltd., Vancouver, has resigned from that company, and is starting in business for himself.

Last year was a very good one for mackerel, and everything points to a long and successful mackerel season this year.



*Tug Helena at St. John, N.B., belonging to the
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Refrigeration of Fish

By IVAN A. BAYLEY, President of Canada-Newfoundland Development Company, Limited.

The freezing and transportation of fish may be cheaply brought about by the use of Liquid Air as the refrigerating medium; Liquid Air, that wonderful product of modern science, has hitherto been greatly misunderstood and through its premature boosting as a miracle worker some few years ago, it received a setback which has been hard to overcome, so that from an almost total relapse to a laboratory curiosity and plaything for scientists, it has gradually reasserted itself as the principal source of oxygen, now so greatly used in all classes of engineering work; and the oxygen apparatus is to-day a part of every well equipped machine shop, or construction work of any kind when welding or cutting of steel or other metals has to be done. This oxygen is furnished by one-fifth of the volume of liquid air; the other four-fifths being nitrogen, which is usually allowed to go to waste in oxygen producing plants. Whereas where liquid air is used to produce nitrogen for making fertilizers or explosives in nitrogen fixation plants, this element is saved, while the otherwise valuable oxygen is generally wasted or allowed to go back to the atmosphere.

In both of these uses of liquid air, the air is liquefied in the liquefaction machines, and it is immediately used by turning it back into its gaseous form and separating it into two elements, oxygen and nitrogen.

This is clearly a most elementary and crude use of this remarkable and mysterious liquid, and surely after the elaborate thought, experiment and expense which has been lavished in the work of reducing our ordinary atmosphere down to this intensely cold liquid, which sports a temperature of some 31° below zero F., and which is a slightly bluish, mobile, sparkling, clear liquid consisting of the very purest of air, it would be certainly too bad if there were not some other and greater uses for it, and certainly we have such a much greater use in applying liquid air as a preserver of fish and bait in storage and transportation.

The government of United States and Canada have been recently advising refrigerator people to store extra quantities of natural ice wherever possible so as to conserve the supply of our precious ammonia, which is simply a carrier of nitrogen for fertilizers or explosives. When we have saved this ice it is heavy, bulky, sloppy and costs as much to pay for its transportation as do the fish it is conserving, besides delivering them in a soft, sloppy, bruised condition, often with the scales rubbed off; while chemical refrigeration by ammonia requires very expensive plants and experts to run them. Not so with liquid air as a refrigerant, which is here now in our time of need to transform all this rapidly and easily into cheaper, better and absolutely sanitary methods of storage and transportation.

The greatest hindrance heretofore in the use of liquid air as a refrigerant has been a means of its transportation or storage; the largest successful receptacle to date being a five quart glass thermos bottle, very fragile and delicate; being a double walled vacuum bottle, silvered on the inside so as to keep the

liquid air insulated away from the light and heat of the surrounding atmosphere, which are its arch enemies.

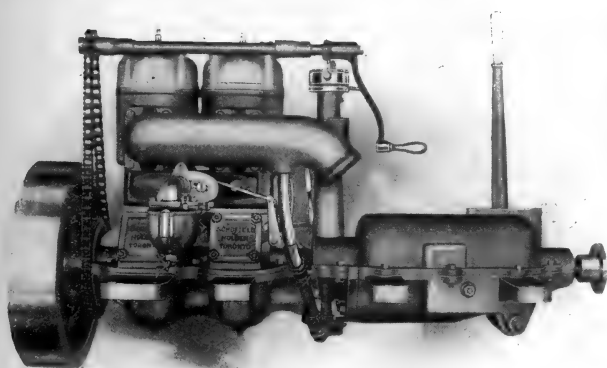
The production of liquid air itself is now a comparatively cheap and simple operation, as being due largely to the brilliant work of M. Claude, the French engineer, who has devised the Claude method of making liquid air; so that this splendid substance can now be made in any quantity desired anywhere where power can be obtained; so that by harnessing any suitable streams within a reasonable distance of the fisheries, or establishing our liquid air plant near a source of coal supply, or with crude oil engines, a cheap and abundant supply of liquid may be had at all times.

A 100 horse power plant would produce about 500 gallons in 24 hours, while a 500 H.P. plant would produce nearly seven times this quantity; the longer the unit the greater the production per H.P. This liquid air could be made at an almost infinitesimal cost per gallon, where a water power is utilized, or if coal were used say, at \$7.00 per ton, the cost of the liquid air would be about 5 to 7 cents per gallon.

Now, through Claude's admirable device for the production of liquid air in large quantities, the greatest obstacle to its use has been forever removed; and to this I have added a container in which this remarkable liquid with its 31°F. degrees below zero may be stored in any quantity desired, and transported safely with very little loss, and as easily as oil or gasoline over long distances. These containers may be built as large storage reservoirs for storing the liquid air when made at the plant; as tanks fitted into smacks or vessels, tank cars, tank wagons or autos or small barrel size. The essential feature of my invention being the most complete and unique method of insulation possible, which shuts off the body of liquid air from all surrounding atmospheric influences and reduces its waste or evaporation to a minimum; the liquid air may be filled into these Bayley containers at the plant wherever made, and distributed along the coast by smack or regular freight boats wherever needed. All that will be necessary on the fisherman's part is to provide himself with a simple dead-room or double walled building of whatever size may suit his requirements; the walls of this building being securely packed with sawdust or eelgrass or any other suitable insulating material, and being provided with a door high up to prevent the outflow of the cold air on entering or leaving the room. No piping or machinery of any kind will be necessary, and anybody who can open and close a door and handle a barrel of liquid will be competent to run such a refrigerator; the fish may be distributed on trays or shelves or hung up or disposed of in any other way which may suit his fancy, and by the simple introduction of one or more barrel size, Bayley's Liquid Air Containers, according to the size of his dead-room; the atmosphere of the dead-room is speedily brought down to any degree of cold desirable, whether for merely chilling the fish or for freezing them hard and quickly.

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Weight, with Reversing Gear, 480 pounds.
Price of Engine, with Reversing Gear, Force Feed Lubri-
cator, Carburetor and Chain Starter. \$227.50

It is obvious that the air in the dead-room, which latter, being well packed and insulated, is furnishing the only source of heat. Now as one cubic foot of liquid air with its temperature of some 310 below zero F., alongside of which the coldest night in Klondike or at the North Pole would be like a hot day in July, in comparison on evaporating, is equal to 800 cubic feet of free air at normal temperature and pressure, it is clearly seen that it will not require the evaporation of much liquid air to displace the warm air in the dead-room with an equal volume of very cold, very pure and very dry air from the Bayley Liquid Air Container. This pure cold dry air circulating around the fish soon robs them of their heat and chills or freezes them to glass hardness as is desired in the best possible manner.

It may be borne in mind that the intense cold of liquid air is able to freeze large fish like halibut, tuna, swordfish, etc., so quickly that the flakes of the fish are not separated by the slow crystallization of ice, which occurs in natural freezing or in ordinary cold storage plants, which large crystals so often have the tendency to open the grain of the fish and make it soft and spongy.

In order that the fisherman may regulate the amount of refrigeration required in the dead-room, it is only necessary to stand a small rod of iron or copper into the Bayley Container, which forms a conductor, conducting the small amount of heat from the atmosphere of the dead-room down into the intensely cold liquid and causing the latter to boil, giving off its clouds of intensely cold vapor; the rapidity of the boiling or evaporation being regulated by the size of the rod introduced into the liquid air. When refrigeration has been carried far enough the simple lifting of the rod out of the liquid stops the rapid evaporation, and the slow normal evaporation continues, maintaining the dead-room at the desired temperature.

Bayley Liquid Air Containers may be installed into tank smacks or tank cars as the case may demand, which could call at stated periods at the liquid air station filling their large tanks from the large local station reservoir container, and then distribute this around the coast to the various fishermen's dead-rooms, wherever established, within a radius of many miles.

Vessels on the banks, instead of cumbering themselves with bulky, expensive ice, could readily carry containers of liquid air aboard and have the hold at any temperature desired, so that fish could be transferred directly from the water to a temperature from zero to 100 degrees below zero, if desired. It is easy to see that such Klondike weather in the vessels' hold would prevent any loss or deterioration in the catch, and the entire refrigeration being carried on by the purest of cold air would render sanitary conditions not previously attainable. The transportation of such perfect fish from the refrigerator fishing vessels into the local dead-rooms ashore, and thence by equally cold transports to the central shipping point, or direct to its market destination, will simply revolutionize the fish trade by giving people in all parts of the country or in Europe, fish which are absolutely fresh right from the hook to the kitchen.

In Newfoundland, for instance, if a liquid air plant were established, say, at Grand Bruit or Burgeo, on the splendid water powers there, it would supply all

the refrigeration necessary from Channe to Fortune Bay, while another at Piper's Hole, in Placentia Bay, would supply the rest of the coast around to St. John's and a liquid air plant established at the Falls at Bonne Bay would refrigerate the Belle Isle coast and render to the Empire as an immediately available food and bait supply the vast schools of herring striking into Bay of Islands, Bonne Bay, and other places along this coast, in such prodigious numbers, which cannot now be handled for lack of salt or refrigeration.

A similar plant established at Sydney Mines, near the cheap coal supply, would supply refrigeration cheaply to a very large fishing territory in that neighbourhood, as well as supplying cars with liquid air for the forwarding of Newfoundland fish arriving at the railway terminal at North Sydney.

A liquid air plant at Pictou, where coal could be had free of transportation, would supply the Northumberland Strait and Prince Edward Island coast fisheries with abundant refrigeration, and it would not be difficult to find sources of power at other central points around the coast or on the great lakes of the whole Dominion.

The advent of liquid air is in its infancy; the Empire needs food and more food, fish and more fish will help to supply this; many fish have been caught and thrown away because they did not stand the expense of handling and transportation. Now, however, by the use of liquid air refrigeration distributed around the fishing districts, such excellent fish as pollock, sea-cat, caplin, squid, skate, hake, cush, flounders, grey, red and ling, cod, etc., may now be cheaply conserved and transported into distant markets anywhere. We have the means now at hand, cheaper, simpler, better, more sanitary than ever before; no great bulk such as ice; no wet or slop or heavy packing cases.

In the case where fish may be shipped in small quantities, they may be made so cold, say, 200 degrees or 300 degrees below zero, that by merely wrapping them well away from the air, they themselves will furnish far more cold for a long time than would be possible to obtain from ice; they would furnish their own refrigeration.

What a chance to get our splendid halibut, tuna and swordfish into distant markets, in perfect condition; simply freeze them down to this tremendous cold, and wrap them well in paper, and they would be perfectly safe for many days; and would save a very large expense usually paid on heavy packing cases, and ice, to the express or freight companies.

This is a national asset now being presented at a time of the greatest national need; the cost of erecting these plants is not great; the cost of the Bayley Liquid Air Containers is merely nominal; its use in the saving of food fish and bait is incalculable, and it should be vigorously acted upon at once.

Parties further interested may address this magazine or the author.

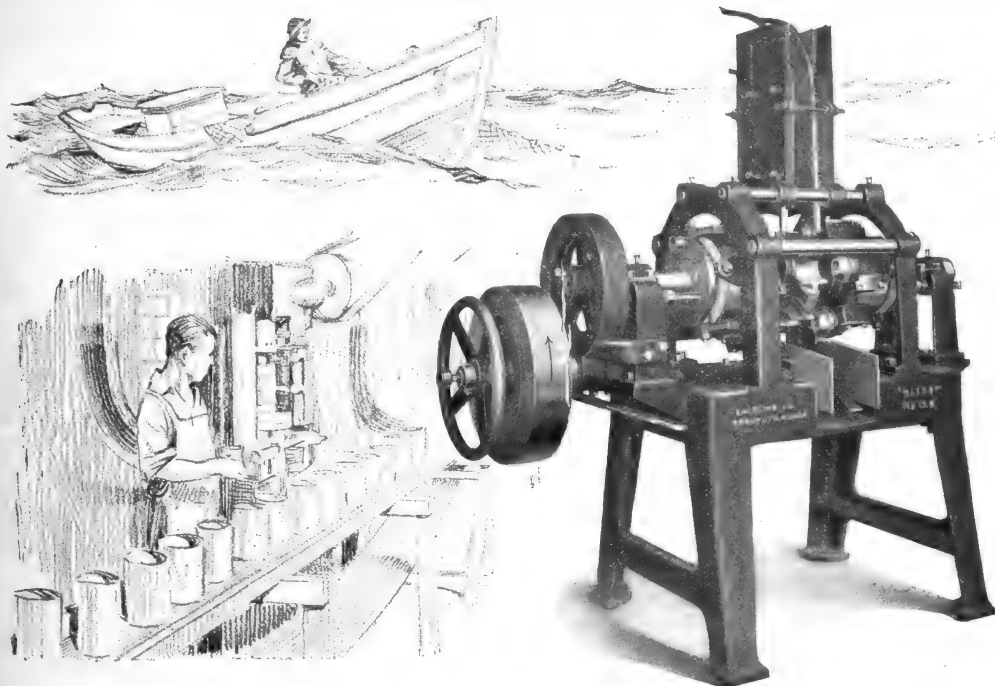
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Write for Catalogue Section No. 18-A



1857

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1917

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PARIS, FRANCE, 100 Boulevard Victor-Hugo St. Quen

Lake Erie Fisherman

The north shore of Lake Erie is dotted with fishing plants so closely situated that almost every suitable landing place is occupied, and the industry employs and supports a large number of men. Not the least important of these fishing points is Port Maitland, which has been for many years the centre and landing of an extensive and important catch.

The fame of Port Maitland as a summer resort is much more than local; the lake shore for a long distance west of the port is lined with cottages, and it draws its summer residents not from Dunnville and other Canadian places only, but also from Buffalo and even from far down the Eastern States. Its possibilities as a harbour are now attracting attention, and with the advent of the T. H. & B. Railway, the place promises to become a hive of industry, both commercial and manufacturing.

Probably the pioneer in fishing on a commercial scale was Henry Ross, grandfather of the present Ross Brothers, so well and widely known among fishermen and navigators, and as enterprising citizens in many other spheres of business activity, as well as genial, companionable good fellows in all their associations. In 1847 Henry Ross left the Old Country, and for a time engaged in the fishing industry at Buffalo, N.Y. About 60 years ago he moved to Dunnville, and from there to Pt. Maitland. He undertook successfully the shipping of fish, and laid the foundation of the great industry which has since grown up. With the keen shrewdness of a born fisherman, and with the understanding of the ways of fish that brings home a heavy catch, he saw that others were leaving uncaught a large part of the fish actually in the waters; with their nets corked so that they floated high, they went over the fish, while he set his nets deeper and got the heavy haul from the same waters.

When he began operations the field was free to everyone, no interfering government demanded a toll by way of license, or dictated the size of the fish that might be taken; no Workmen's Compensation Board forced him to keep books or file pay-roll statements; no Food Controller made them report their catch, and turn over a percentage to the department; the fisherman was a law unto himself, and made and sold his catch at his own sweet will. Mr. Ross's field was the lower river and the lake front, in common with others. Later a license fee was imposed, the fee at first being about \$15 for any kind of net he might wish to use. He obtained an exclusive license and sublet to others the field covering the lake front and 3 miles up the river. About 45 years ago pound nets were introduced here, the license for them being held by a Mr. Werrett, of Simcoe, who seems to have been something of a philanthropist, and is still remembered for having sent the Northern Messenger to the children of the village, and generously distributed presents of books among the older ones. Charles Ross, son of Henry, was interested in the pound net fishing, thus widening the work of his father, and, of course, requiring more pretensions boats. Gill nets were introduced about 30 years ago.

To navigators and dwellers at Port the names of the following boats now or formerly operating there, will be familiar. The Ross boats have been the Eleanor, Willie Wilson, Ladysmith, Norfolk and Verda

Belle; McKee and McKeown, the You & I; Crumb & Crawford, C. C. Lloyd; Ed. Moss, Lena; Little & Suddall, Sadie and Caldera; Dougher and Jenkinson, Dorothea D.; Mossip & Gorrell, Ellen V., and there are in addition some gasoline boats; in all not by any means a discreditable showing for a place of the size.

But let no man think that because of the number of men engaged in the work, or the stories he hears of occasional heavy catches, that this field is an bonanza, or the fishing industry a sinecure. Lake Erie, it is well known, is shallow and subject to terrific storms, and the fisherman is entirely at the mercy of the wind and waves. If the wind blows, in a storm, from the land his nets may never be heard of again; if towards the shore, he finds the shreds of the nets strewn along the shore, entangled with boards, timbers, branches of trees, logs, and every form of driftwood, frequently hopelessly beyond repair. In December, when the whitefish harvest is on, if he waits one day too late with bringing in the nets, they are lost. The loss of a boat through capsizing in a squall is not unknown here. And the Port Maitland fisherman is exposed to another danger. His fish houses are built in the Grand River, and the actions of the Grand, when it goes on a rampage, are beyond any forecasting. At the time of writing this article, it is again at its destructive work. The extreme cold of the past winter has coated the Grand with ice, in places 30 inches thick; this has come down from above with such force as to tear out the long bridge at Dunnville, the ice in Lake Erie is still firm, and the "lower river"—from Dunnville to Port—is held back, and the low lying lands near the river are under several feet of water. The tugs, the fish houses and their contents, and the docks and landings of the fishermen are at the mercy of this one flood; one gas boat and one tug have gone out with the ice, and the fate of the rest is yet in the balance. Like the muskrat, the fisherman, when the flood comes, can only abandon his property, move back, and when the waters subside, go back to find what may be left.

And not in winter only are there uncertainties in the business. Seasons have their ups and downs, and one memorable summer some years ago left the fishermen for their year's income, not half enough to pay for their nets, to say nothing of their outlay for wages of men, or of anything for the owners for their time or investment. It is not all gold that glitters. Some farmers, good and successful men in their own line, thinking that there was a sure and a quick way to fortune in fishing, got an outfit and started. It is reported that they made one memorable voyage and sold out next day.

The fish caught here consist mostly of herring, whitefish, pickerel, dore, mullets, suckers, catfish and sturgeon.

The men behind this industry are men with the energy and enthusiasm of youth, they have the daring and determination that befits men who are accustomed to battle with Erie's summer storms and December gales, and the visitor who has been among them either as a summer cottager or for a period of even a few days, must carry away an impression of their business solidity, as well as of their free and open-handed hospitality.

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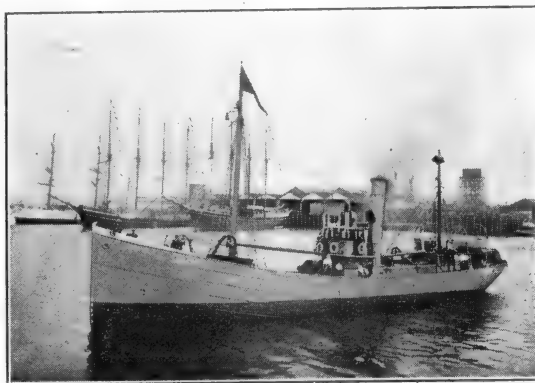
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CHARLOTTETOWN, P.E.I.

The lobster season for almost all of Prince Edward Island, the exception being from Cape Traverse to West Cape, legally opens on the 26th inst., but as the past winter has been of unusual severity, with unusually heavy ice, it will be some days after this date, before fishing actually begins, unless unusually mild weather, and strong southerly and westerly winds set in.

Last year 180 factories, employing 3,000 fishermen, were in operation. This year the number of factories will be about the same, but the high price of rope, tin plate and other equipment and material, the uncertainty as to transportation, and as to the number of fishermen who may be drafted under the Military Service Act, will tend to a reduction in the number of traps fished.

The packers are proceeding cautiously until the situation clears.

Over half of the packers took advantage of the month's extension last autumn, from August 11 to September 10, and the combined spring and fall pack was about equal to that of a normal spring's fishing. At a large meeting of packers held this past winter in the question of changing the season was discussed.

The suggestion to have it from August 11 to October 11, with no spring fishing, was opposed by a large majority. The consensus of opinion was that there should be two months' fishing in the spring, and none in the fall.

For the northern section, where the ice lingers longest, May 10 was proposed as the opening date, but the packers in the last favoured earlier in May. Finally a resolution recommending May 1st to July 1st carried.

The arguments, in brief, against fall fishing were:

(1) The marketing of canned lobsters takes place in the spring and early summer, when the goods are contracted for. Following the canned fish season, the demand for fruit and vegetables comes on, and later that for meats. All of these products have their regu-

lar market seasons, and if advantage is not taken of the market when it is open, lower prices are usually obtained later.

(2) There would be heavy loss of gear in the stormy months of August and September. The success of last year should not be taken as a criterion, as these months were exceptionally fine. In nine years, out of ten fall fishing would result in the loss of almost all the gear.

(3) Lobsters are not fit to pack until the last of August at least.

One large packer stated those caught between the 11th and 25th of that month in 1917 were inferior. Those taken in September, however, while lacking the solidity and flavour of the spring lobster, were satisfactory, with respect to colour and general appearance.

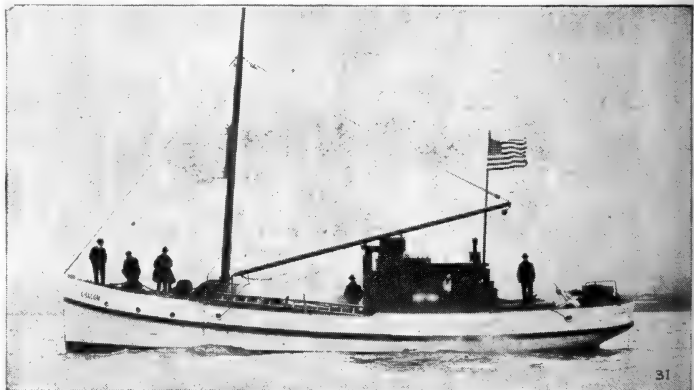
The usual preparations are being made for cod fishing this season, as soon as the ice moves out. The Gorlon-Pew Company of Gloucester, that handled large quantities of cod and hake here last year will be in the business again, and it is understood that other large American firms are also to establish branch concerns in this province.

In the Provincial Legislature last week, the question of the decline in our oyster industry came up. In reply to an inquiry as to what the Government was doing towards investigating the disease which was playing such havoc among the beds (especially in Richmond Bay), and which was said to have been brought here by the imported American oysters used for re-stocking, Premier Arsenault made a statement.

He said that he had taken the matter up with the Federal Department of Fisheries. They in turn had referred it to the Biological Board. Prof. Robertson, of Queen's University, Kingston, was engaged to make an investigation. Specimens of oysters from different parts of the province were sent him. He stated that the disease was not limited to Richmond Bay, but to other waters where no imported oysters had been planted.

NEW ALASKA CANNERY TENDER "CHACON."

The number of fishing vessels built for use in connection with the industry in Alaska is constantly on the increase, and this year some very fine cannery tugs have been built, not only by the new concerns just going into business, but also by many of the older concerns who are increasing their equipment. Among the finest boats built this year is the new cannery tender "Chacon", shown in the accompanying illustration. She is owned by Sawyer & McKay, of Ketchikan, Alaska, who are the owners of a number of salmon traps in that district. The boat is intended as a combined fish carrier and tug, and has been heavily powered, her engine being an 85 h.p. Frisco Standard motor. She is 65 ft. long, and on her trial trip made a speed of 10 miles an



hour. She was built by Johnson and Waughbo, of Tacoma, and is now operating out of Ketchikan.

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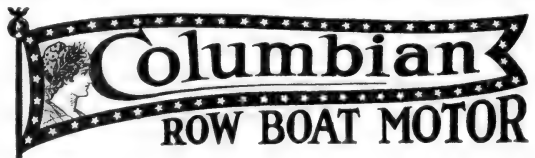
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THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
- OF FISH PRODUCTS -

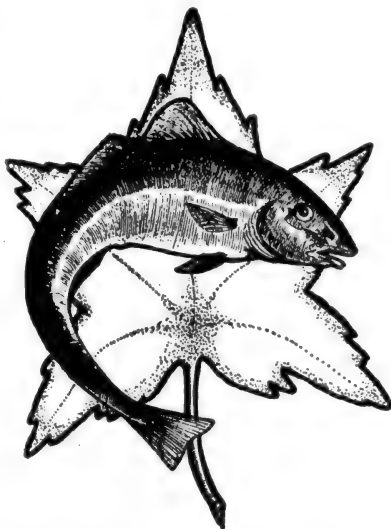
F. WILLIAM WALLACE
EDITOR

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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, MAY, 1918

No. 5

A NEW ERA FOR PACIFIC FISHERIES.

The new market which is being developed in Western Canada for Pacific flatfish and cods, and which can only be economically caught by the steam trawler, leads us to predict that within a very few years, steam trawling for these fish will become the principal deep-sea fishery of the Pacific.

The day of the halibut is nearing an end. In a year or so, it won't pay to fit out large vessels for the Northern halibut fishery, and the cost of production at present, puts the halibut in the carcase class.

The flatfish—brills, soles, skate, witches, plaice; and red cod, grey cod, and ling cod—can be caught close inshore all along the British Columbia Coast. The trawlers will be able to operate anywhere between Prince Rupert and Vancouver and there will be no need to go steaming up to the Gulf of Alaska for trips of fish.

The work of the Canada Food Board and the Fisheries Department in popularizing these Pacific fish is one of the best moves ever taken by the Government and should be appreciated by all those interested in the Pacific deep-sea fisheries.

It is conclusively proved that steam trawling can be carried on successfully in Pacific waters, and we can plainly see the advent of the steam trawler as the big factor in the future development of the Pacific fisheries. The day of the halibut is waning. The flatfish and cods—once despised—are going to become the big fishery of the Pacific Coast.

SMOKED HERRING—A WAR-TIME BREAKFAST.

Smokers of kippers and bloaters on both coasts, and also the producers of similar lake fish should strongly advocate the use of their product as a breakfast dish to take the place of bacon and ham.

The Canada Food Board favor the tasty bloater and kipper and are advertising the use of them, but the producers must do their share to popularize these products.

These are the rays for introducing fish of all varieties to the people of Canada and prices should be shaded to a minimum of profit. Once firmly established, the future stable market will amply repay all the lack of profit during the introductory months.

Fish is in active competition with eggs and meats, and fish is only going to retain popularity if it is cheaper than either the foods mentioned.

FIRST CHANCE TO THE RETURNED SOLDIER.

There is only one way in which Canada can adequately repay the men who have fought for our liberty overseas, and that is by allowing them to develop our natural resources. The returned soldier constitutes a problem which we have to face. After going through the hell of war, the soldier is not the same man as he was prior to joining the colors. He has lived a strenuous life; has taken chances and flirted with death, and through Army discipline, has been brought to a high state of physical fitness for work which requires endurance and strength.

These men will not take kindly to desk work and sedentary labor on their return to civilian life. Clerical work is now pretty well within women's sphere and women will retain the positions they were called upon to fill as war-time substitutes. Men will have to return to men's work.

The Government holds many privileges which ought to be turned over to the man who has returned after doing his bit. There are farming lands, timber areas, mining and fishing rights to which the returned soldier should have first chance, and through them they should be developed.

As a fishing journal, we are directly concerned with the development of the fisheries, and in our opinion, the soldier can play a large part in their exploitation. Salmon fishing licenses; herring seining and weir licenses and licenses for the taking of smelts, and other protected sea fish on both oceans should be granted to returned soldiers. On the inland waters, the returned men should be granted all available fishing areas. In conjunction with the fishing licenses, the men should be granted sections of Government land for farming purposes in such localities where both are available.

The income from the fishery will give the men capital to develop and improve their homesteads. There is also another feature. The man who is breaking up a farm grant must put in much labor and capital before he is remunerated. In fishing, the returns will be much quicker and the fisherman is making money just as soon as he starts out. In farming, it takes a year before the farmer receives a return for his labor.

The idea could be elaborated greatly. The community plan could be worked to advantage and canneries for salmon, herring and sardines could be operated by soldier colonies, also plants for the drying and curing of the fish caught.

Something should be done along the lines suggested and we believe that the men will take kindly to the manliness and the element of chance in the fisherman's life. Let us get our own men into the exploitation of our natural resources and keep out the alien hordes who are waxing rich in our fishing industries, while our own boys are fighting and dying in order that "Liberty shall not vanish forever from the earth."

INTERNATIONAL FISHERIES COMMISSION ON PACIFIC COAST.

The International Fisheries Commission of Canada and the United States resumed their sessions at Seattle on April 25th, and have since held meetings in Victoria, Vancouver, Prince Rupert and Ketchikan. The regulation of the halibut fishery of the Pacific and the salmon of the Fraser River are the two most important questions being dealt with by the Commission. With regard to the former, the accusations made by the Seattle firms that Prince Rupert discriminated against them and that Canada was out to wrest the halibut fishery from the U. S., was signally disproved by the evidence adduced in both Prince Rupert and Ketchikan from American buyers and American fishermen.

Secretary of Commerce Redfield, who represents the U. S. on the Commission, is a singularly capable and broad-minded man, and his attitude in all of the sessions is indicative of the new spirit of cordiality and good will now existing between Canada and the United States. Probably no former Fisheries Commission has

met with such mutually good intentions towards each other.

What will be done with respect to the halibut fishery is hard to forecast. Several suggestions have been made, but most of them will work a severe hardship on the capital invested. We might suggest a close season of three months during December, January and February for the first year with the vessels using only the lighter hooks and gangings of codfish gear during that time. The second, third, fourth and fifth years, the close season should be extended until the fifth year is closed for the twelve months and for five years following, the close time might be gradually lifted until the tenth year when the fishery could be opened for the full twelve months. Thus:

1919	Close season	3 months.
1920	"	" 5 "
1921	"	" 7 "
1922	"	" 10 "
1923	"	" 12 "
1924	"	" 9 "
1925	"	" 7 "
1926	"	" 5 "
1927	"	" 3 "
1928	"	" Open "

This would give the halibut a chance to become rehabilitated, and only small hooks and gear should be allowed. It would also give the companies a chance to develop the steam trawling and line fishing for flat-fish and cods.

Of course, a certain amount of halibut would be caught on the small hooks, but vessels will be able to fish for cods on the Southern grounds, and the Northern banks — the last halibut of the halibut — will be given a rest.

THE ONTARIO FISHERIES.

The Ontario Government has entered into agreement with White & Company, Limited, of Toronto, wholesale fish and produce merchants, for the warehousing, re-icing, re-packing and delivery of Government fish. This arrangement is understood to give the contracting firm the right to distribute all the fish used in Toronto, while the Government may forward direct from the point of shipment to all other places in Ontario, when this can be conveniently done. White and Company will ship to outside points as directed by the Sales Branch of the Ontario Fisheries Department. The Government fish will be sold at a fixed price. This, however, has not been decided upon, but it is thought that trout and white fish, which last year retailed at 12½ cents a pound will be retailed this year for about 15 cents.

H. S. Berner & Company, 82-92 Beaver street, New York, are buying regularly monthly shipments of large quantities of fish skins such as sharks, porpoise, whales and other large fish skins without scales.

Heretofore there has been no market for such skins and it is possible that a profitable business might be worked up by some readers of the Canadian Fisherman in this line.

The Perfection Motor Company, Canadian agents for the well-known Caille Perfection Motors have moved from 308 Craig street to much larger and more central quarters at 380 St. James street, Montreal.

Correspondence

FISHERY BOARD FOR SCOTLAND.

Edinburgh, 8th April, 1918.

Editor, The Canadian Fisherman, Montreal, Canada:

Sir,—I observe from the issue of the "Canadian Fisherman" for December last a statement to the effect that the Food Controller, with the consent of my Board, has suspended all fishing laws in so far as they affect Scotland, and as this statement is incorrect and may mislead those interested in fishery administration I should feel obliged if you would correct it. The Order made by the Food Controller simply conferred powers upon my Board to suspend fishery laws if, and when, and in such areas as they thought fit. A copy of the Order is enclosed herewith for your information.

I am, Sir,

Your obedient servant,
DAVID T. JONES,
Staff Paymaster, R. N. R.,
Secretary.

VICTORIA FISHERIES PROTECTIVE ASSOCIATION.

Baddeck, C. B., Nova Scotia,
April 25, 1918.

Editor of the "Canadian Fisherman," Montreal:

Dear Sir,—I am sending the enclosed letter to all of our members, in Montreal, Halifax, Sydney, Glace Bay, Moncton, Boston and twelve or fifteen other places. As the reform just made by the Department in the local Fishery Service is a radical one—taking it out of politics and transferring it to the Civil Service Commission—perhaps you may be able to find room for a paragraph about it. I had some correspondence with you three or four years ago when we were trying to bring this reform about.

Very truly yours,

GEORGE KENNAN,
Secretary.

VICTORIA FISHERIES PROTECTIVE ASSOCIATION.

E. G. MacAskill, Pres. George Kennan, Sec.
Baddeck, C.B., Nova Scotia,
April 25, 1918.

Dear Sir,—In November, 1914, the Secretary of this Association, by direction of its Executive Committee, made to the Honorable G. J. Desbarats, Deputy Minister of the Naval Service in Ottawa, a long and carefully considered report upon the state of the inland fisheries of Cape Breton Island, and the urgent necessity of giving better protection to the trout and salmon in the Cape Breton rivers. In that report, and in a later one made the following spring, this Association respectfully urged the adoption of certain important measures of reform, as follows:

1. That, if practicable, the Fishery Service be taken wholly out of politics, and that Fishery officers be chosen and appointed for merit only and without regard to political considerations.

2. That the force of more than 200 guardians then nominally engaged in protecting rivers and brooks be cut down to about 50, by dismissing men who were not needed, or who rendered political services only.

3. That the money saved by the dismissal of 150 un-

necessary guardians be used to increase largely the salaries of men who should be chosen for merit only, who should do no political work, and who should devote all of their time to an effective patrol of the streams.

After some correspondence, the Department decided, in the spring of 1918, that the reforms asked for, although desirable in themselves, were not practicable at that time. This Association then asked that, as a temporary and experimental measure, the Department appoint at least twelve "special" or head guardians, two each for the rivers Margaree, Middle, Baddeck, Mira, North and Clyburn; that it pay them increased salaries, and that it require them to devote all of their time to an effective patrol of the streams and to real protection of the fish through the prevention of dynamiting, spearing, netting and other illegal practices. This request was granted in part. In April, 1915, the Deputy Minister of the Naval Service notified Inspector McLeod and this Association that it would appoint six "special" guardians, one for each of the rivers above named, and would pay them a salary of \$36.36 per month. These six "special" or head guardians were appointed in the spring of 1915, and their services were so satisfactory that the number was gradually increased, from year to year, until in 1917 there were eleven.

With this improvement in the Fishery Service the Association had to be content, because more radical reforms did not seem to be practicable in the existing state of affairs and in the midst of war. Our Executive Committee and our members, however, as well as Inspector McLeod, have steadily sought to bring about the complete separation of the Fishery Service from politics, and the organization of a smaller but better paid and more efficient force of guardians. The Department itself favored this reform, but there were many difficulties in the way, and it was not until last winter that they were finally surmounted. In January, 1918, the Deputy Minister of the Naval Service informed the Secretary of this Association that "it has been decided to take the Fishery Service out of politics and place it under the control of the Civil Service Commission." In transmitting this information the Deputy Minister was good enough to say: "The Department appreciates very much not only the full expression of your views on all matters relating to the better protection of the fisheries, but also the co-operation of your Association with this Department's officers in Cape Breton."

The details of the impending reorganization—number of guardians, amounts of salaries, etc.—have not yet been fully worked out; but we are assured by the Department that appointments of guardians will hereafter be made under the supervision and direction of the Civil Service Commission, for merit only, and without any reference whatever to political considerations. There is reason also to believe that the force will be greatly reduced; that salaries will be materially increased; that all incompetent men will be weeded out and kept out, and that the Island will shortly have, under the supervision of the Civil Service Commission and the direction of Inspector McLeod, a better and more effective Fishery Service than it has ever before known.

In order, however, that these and other betterments may be secured and preserved, it is essential that this Association be not only maintained, but strengthened for future work. Its relations with the whole Fishery

Administration are now sympathetic and cordial; its influence is steadily increasing, and it can render valuable assistance, both to the Department and to the Inspector, by watching the work of the guardians; by co-operating with the Civil Service Commission in the selection of suitable men, and by impressing upon the public mind the importance and necessity of fish conservation, which, in the strain of a long-continued war and in the impending years of world-wide food shortage, will become more important than ever before. Details of the work done by the Association in the last two years will be submitted to the members at the next annual meeting, which will be held in July.

Very truly yours,

GEORGE KENNAN,
Secretary.

Beaver Valley, Port Essington, B.C.,
April 18, 1918.

Editor, Canadian Fisherman:

Dear Sir,—In your issue of May, 1917, you appeal to fishermen to do their best, "to fish hard, to fish for fish and fish for your country."

For several years I have asked men in official positions to look into the sea-gull matter. Am I not right in stating that one gull eats more young salmon in its life than any one fisherman can catch? Yet they are protected. In four years from now if sea-gulls were destroyed there would be a large increase in the salmon run and no talk of closing the river.

Saw-bills should have a bounty on them and seals should have a larger bounty to induce men to hunt them, and we hear that the present bounty is removed. The general fisherman takes what he can catch, but settlers have the future to think of and this year of all years we wish to make our catch a large one. Every fish helps, and every young salmon a gull eats, a seal destroys means a serious shortage. Patrol boats should be unnecessary, but they are not and they do good work, but the gulls do far more harm in a season than they do good.

Can anything be done through the medium of your paper?

If there were people of independent means, saw-bill, gulls and seals would be sport, but fishermen are not usually too well blessed with money.

Yours faithfully,
R. E. LAMBLY.

If this letter does one scrap towards getting rid of these pests I shall have done a little towards "my bit."

May 20th, 1918.

W. R. Spooner, Esq.,

Chairman Transportation Committee,
Canadian Fisheries Assoc., Montreal, P.Q.

Dear Sir,—Referring to our letter to you of May 16th, calling your attention to tariffs issued by the Canadian Government Railways, covering fish from points in Eastern Canada to Montreal, and points West, showing increase over and above the 15% increase granted by the Board of Railway Commissioners recently. We took this matter up with the Canadian Government Railways through the Board of Trade and are to-day in receipt of a wire from Moncton, stating that the Canadian Government Railways would protect the rate from Mulgrave to Montreal as published under Tariff No. C. A. 62, effective March 15th, pending an opportunity of further discussing the matter.

No mention is made of rates to Quebec City, and points in Ontario, to which we also objected, but presume these will be discussed as soon as a meeting can be arranged between the various parties interested.

As the matter now stands we have a rate from Mulgrave to Montreal on fresh fish in earload lots 34½¢ and less than earloads 46¢, which is what we thought we should have.

Yours truly,

MARITIME FISH CORPORATION, Limited.
Per. H. Welham.

May 16th, 1918.

W. R. Spooner, Esq.,

Chairman Transportation Committee,
Canadian Fisheries Assoc., Montreal P.Q.

Dear Sir,—Re tariffs issued by the Canadian Government Railway as follows: C. A. 53 superseded by C. A. 61, effective March 15th, 1918, covering 15% increase in rates granted by the Board of Railway Commissioners. We have since received another tariff from the Canadian Government Railways. C. A. 63 effective May 15th, which cancels C. A. 61 and shows a further increase of approximately 11%.

Also C. A. tariff 54 cancelled and replaced by C. A. 62, effective March 15th, showing 15% increase. We have since received another tariff, C. A. 64, effective May 15th, which cancels C. A. 62, showing a second increase of approximately 15% to some points. We object to this further increase very strenuously, and would ask you to call a meeting of the Transportation Committee of our Association, with a view to lodging a protest against this second increase, and endeavor to have tariffs cancelled.

Yours truly,

MARITIME FISH CORPORATION, Limited.
Per. H. Welham.

Mr. A. L. Hager returned to Vancouver on May 8th, after a prolonged visit in the Eastern cities.

There is a decided shortage of herring bait in Prince Rupert — the usual herring run having failed. A remedy is suggested by using shack bait, which could be procured from the inedible fish caught by the Rupert steam trawler.

The steam trawler "James Carruthers," of Prince Rupert, landed 120,000 lbs. of flatfish and cods on April 22nd — the whole caught within eight days. These fish are being distributed throughout the West under the regulations of the Canada Food Board.

Over 100,000 lbs. of flatfish and cods were shipped from Prince Rupert to Western points during the last two weeks in April. A brisk demand is being established for these excellent fish.

Sandy Bogie, who for many years was in charge of the Vancouver business for Butterfield and Mackie, and later foreman for the Vancouver Ice and Cold Storage Co., is back with the old firm again, as "Jimmy" Johnston is back east on a trip, and B. & M. insisted that "Sandy" come back and take charge.

Harry Ives of the Crown Fish Market has returned from his annual trip through the Prairie cities. He reports the fish business good, and everyone prosperous. Labor is short, however.

RE CHICAGO HALIBUT CONFERENCE.

Following the International halibut conference at Chicago, on March 21st, which was called by the United States Food Administrators on recommendation of the State Food Administrators of Washington and Oregon, to regulate the price of Pacific Coast halibut at 16c and sablefish at 8c f.o.b. Seattle. The Canada Food Board decided not to concur in the attempt to arbitrarily fix these prices.

This conference was attended by several American producers and distributors, the United States Food Administration being represented by Mr. Kenneth Fowler, and the Canadian Food Board by Capt. F. W. Wallace. Other Canadian representatives were Messrs. A. L. Hager, Vancouver; T. H. Johnston, Prince Rupert; C. P. Rhodes, Calgary; W. Douglas, Winnipeg; D. J. Byrne, Montreal and J. J. Harpell, of the Canadian Fisheries Association, Montreal.

A complete hearing of the question of halibut and black cod production and distribution was had and after adjournment a stenographic copy of all evidence taken was forwarded to the Canada Food Board for consideration and on April 12th, the following statement was issued by the Chairman of the Canada Food Board and sent to Mr. Kenneth Fowler, Division of Fish Industries, United States Food Administration, Washington:

"It has been brought to our attention from time to time that the price of halibut and sablefish should be fixed by Order and I note that on call of the United States Food Administration, Division of Fisheries an international conference of American producers and distributors of halibut, was held at Chicago on March 21st. This conference was attended by Capt. F. W. Wallace, of the Fish Section of the Canada Food Board, and certain producers and dealers in halibut from the Dominion.

"A full transcript of the proceedings at this meeting is at hand and also a copy of the report of Capt. Wallace.

"The Canada Food Board considered the halibut problem in detail last fall and undertook to solve it by popularizing other fish, such as cods, flat fish and herring. As a result halibut has to a considerable extent been side-tracked and at present there are wholesale distributors in the Dominion with stocks of halibut on hand that will have to be sold at a loss. Canadian consumers are taking up the use of other fish with enthusiasm going easy on halibut.

"It is evident that the Chicago meeting was called at the instance of the State Food Administrators of Washington and Oregon who state that halibut and sablefish are the only fish other than salmon procurable in the States of Washington and Oregon.

"Halibut is admittedly in the luxury class. It is becoming increasingly scarce and within a few years, the Pacific halibut fisheries will be a thing of the past.

"Regulating the price of halibut will not benefit the situation. The difference between the present competitive prices and regulated prices would not amount to much and would probably reflect back on the fishermen whom if prices did not appeal to them would turn to more remunerative occupations. This would have the effect of lessening

production not only of halibut but of other fish. It has been the consistent policy of the Canada Food Board to avoid price fixing by Order except where temporarily necessary it being, as you know, a most dangerous expedient. The Canada Food Board, therefore, does not concur in the proposal to fix a wholesale price of halibut or sablefish."

APRIL SEA FISHING RESULTS.

The weather on the Atlantic during April of the present year was not favourable for fishing operations, especially in the smaller craft inshore. And yet the outstanding feature of the month's work was an increase of over 28,000 hundredweights, of cod and haddock, landed in Nova Scotia, compared with the catch in April last year. This is all the more gratifying because of the fact that the catch of these fish in April last year showed an equally great increase over that in April 1916. The increase in both years was due, mainly, to a larger spring catch by the Lunenburg banking fleet.

The catch of lobsters during the month 22,706 hundredweights, against 35,295 in April last year. The falling off was due, largely, to abnormal ice conditions and unsuitable weather. With better weather during the latter part of the month, lobsters were abundant and fishing results good westward of Halifax.

The current lobster season opened on the 15th of November last, and up to the end of April the total pack was 9,341 cases, while 18,543 hundredweights were shipped in shell to market.

During the corresponding period in the preceding year the pack was 16,279 cases and the shipment in shell 31,819 cwts.

The catch of alewives in St. John Harbour was almost 9,000 hundredweights less than a year ago. A much larger proportion of the catch was used fresh or smoked, than in previous years.

The sardine catch in Charlotte County, N.B., was only half that of April last year, and about one-third of that of April, 1916. Many of the weirs were damaged by ice and rough weather in the course of the winter, and are not yet in fishing order.

One lobster fisherman was drowned off Cumberland County, N.S.

In the Northern and Vancouver Island districts, over 8,000 hundredweights of herring were landed against 200 hundredweights during April last year. This was offset by a shortage of almost 8,000 hundredweights in the southern district.

The halibut catch for the whole of British Columbia in April this year, was 3,564 hundredweights less than in April last year, but 6,000 hundredweights greater than in April 1916, and 4,000 hundredweights greater than in April, 1915.

The salmon catch in the western province for April was 3,860 hundredweights against 2,300 for the same period last year.

Comparing the whole sea fisheries of Canada for April this year with last year, we find that salmon, cod, haddock, hake, pollock, and flat fish were landed in greater quantities while lobsters, herring, alewives, sardines, halibut, and clams were landed in diminished quantities.

The total value in first hands amounted to \$1,153,040.00 against \$1,008,955.00.

FISH-FREEZING.

(Bulletin 86, Educational Dept., New England Fish Exchange.)

Plants engaged in freezing fish are doing conservation work of the most important kind, according to Ernest D. Clark, investigator in fish for the United States Bureau of Agriculture.

In a recent interview he said: "But for the fact that fish can be frozen and held in storage for months without important change in food value or flavor, vast quantities of fish would go to waste, and this valuable nitrogenous food and substitute for meat would be scarce or even unobtainable, except in the smoked, salted, or canned form, during a large part of the year. The additional fact that fish properly frozen and inclosed in a protective glaze of clear ice may be shipped long distances without deterioration permits many inland communities to obtain in the winter favorite varieties taken from distant waters.

"Without such conservation bluefish would be on the market for only a few weeks, and then mostly in the vicinity of certain waters; salmon, unless canned or smoked, would be unknown in many sections; there would be no country-wide interchange of halibut, pike, mackerel, smelts and other popular fish; and during the winter, when storms prevent fishing and schools of fish migrate to deep water or southward, fish of many varieties would be a costly delicacy instead of occupying their matter-of-fact place on the table.

"Each fishing season large quantities were saved, as they still are, by canning, smoking, salting and pickling. Freezing and storage, however, has the advantage over these other methods, in that it does not alter the flavor or appearance of fish, and therefore makes available months later, in almost the natural condition, the spring or summer catches of seine or hook.

"The fish-freezing plants located at many points on our coasts and the Great Lakes, and constituting an important industry, are becoming increasingly useful as sources of nitrogenous food to make up the deficiencies in the meat supply. Their work is true food conservation. Harvests of fish, unlike land crops, add to rather than take from the fertility of our soils. Meat represents the conversion by animals of grain or other foodstuffs into another form of food. Fish, however, represents the conservation of valueless aquatic vegetation or animal material into human food, and, had merely for the labor of harvesting, they are a net gain in the food supply.

"The average period of storage for fish, as shown by investigation and statistics, is approximately only eight months. Much frozen fish, however, is sold within a few months after it is stored, and only rarely are batches of fish held as long as twelve months. Careful analysis of fish properly stored for such periods fails to indicate any important change in the food value of the fish, or to reveal any noticeable alteration in the flavor. To study in a practical way the effect of freezing storage on flavor, a test was arranged with a large group of people who were unaware they were being used for subjects. These people were served half portion of fresh fish (mackerel) and a half portion of the same species of fish properly frozen and stored for nine months. The average individual was unable to distinguish between the fresh fish and

the frozen fish and a number expressed a preference for the frozen lot.

"Fresh fish, properly frozen, glazed and held at low temperatures for nine months or a year show no important changes in composition to the food chemist or bacteriologist. No lessening of palatability noticeable to the average housewife occurs. This is to be expected, as freezing, unlike most other preservative measures, takes nothing from the fish and adds nothing to it, except a thin outer covering of ice, which soon melts upon thawing the fish for consumption. The low temperatures at which the flesh is held in storage are well designed to prevent chemical or other changes over a number of months. The freezer can deliver fish practically as good as, but not better than, that which it receives.

"To determine the behavior of fish under storage, the Bureau of Chemistry held fish for the excessively long period of twenty-seven months in cold storage under its control. At different times sample lots of fish were withdrawn and analyzed. These studies showed no significant difference in composition between the frozen fish and fresh fish of the same species. Of special interest is the fact that no loss of those nitrogenous constituents which give to fish its chief food value was noted.

"When frozen fish have thawed, they are as perishable as fresh fish, and should be consumed as quickly as possible. Even partial thawing lessens greatly the perfect protection of glazing and hard freezing. Retailers, therefore, should make every effort to have their frozen fish reach them with glaze unimpaired. After the fish reach them, the retailers should make every effort to keep them hard frozen and glazed until they are actually sold. This best can be accomplished by ordering frequently and not in excess of immediate sale. Customers should be encouraged to buy fish in the hard-frozen state, either to be thawed out to order by the retailer or, even better, delivered to the house-wife hard frozen. She then should place them in a covered utensil in the refrigerator, or other cold place, and allow them to thaw gradually. Fish never should be thawed by exposure to heat or by soaking in either cold or warm water. Such rapid thawing lessens their food value, and tends to dissolve out flavors essential to their palatability."

THE LOBSTER QUESTION FROM THE VIEW-POINT OF NATIONAL UTILITY.

Now that the fisherman is taking the season's toll of the delicious crustacean known as the lobster, from the sea that holds so much for our good, the question of how to conserve food, makes wide the Government's chance to enhance the value of the lobster, both to the fisherman and to the consumer. A few years ago, the apple situation demanded drastic measures, and a cook book was prepared, showing how apples might be used to advantage. To-day, we are being told that it is necessary to save beef, wheat, and bacon, for the sorely tried people overseas. Now, a great many people, are using lamb, veal, and mutton, in the desire to be patriotic, and leave all of the beef and bacon free for export. But recent publications are carrying articles advocating that shoddy be used in lieu of good woolen cloth, because the greater demand for mutton, has of course, depleted the supply of wool. The lobster, being in season, is cheaper than mutton, and just as nourishing. When the season is over, the supply of canned varieties will be available, and if the same

interest were taken in the lobster trade that once saved the apple business, would it not be good nationally? The answer is emphatically: "Yes."

The poacher too, might be looked after.

As a seed lobster, from fourteen to thirty-six ounces, produces 21,699 increase, it may readily be seen what damage is done by breaking the laws made for the conservation of the Canadian lobster supply.

The average fisherman, as well as many other people, have no time at their disposal for enquiry along this line, and a statement to the effect of fish increase as quoted above, provokes much remark. In our schools, a question as to what was the earning capacity of the fisheries of Canada for the past year, cannot usually be answered. This should not be, when the fisheries are nearly half of our National life.

We have frequent lectures about diverse subjects, good in their way, but sometimes unnecessary. The lecturer who might be sent out to educate the public re the use and conservation of the lobster, would be giving information of national importance. As we must be clothed, and our armies as well, why not do something in the way of an advertisement, to show that it is better to consume lobsters than mutton, and that by doing so, beef and bacon can be as well saved.

MARGARET McLAREN.

ONTARIO IN FISH BUSINESS

The entry of Ontario into the fish business has caused a great deal of discussion and created an interesting situation both from the standpoint of the public and those engaged in the business. It is a natural sequence that those who have investments in equipment for the buying and distribution of fish should oppose an undertaking that may become sufficiently extensive to absorb the major portion of this important industry. It is quite as natural that the people who own the waters and the fish, and who have for years, for certain fees, extended by license the privilege to fishermen to help themselves should, under pressure of high meat prices, seek some curtailment of these privileges, and in part, at least, appropriate them to their own interests. It may as well be recognized first as last that, judging from the record of the Hon. Finlay Macdiarmid, Minister of Public Works and Highways, and administrator of the Game and Fisheries Department, that Ontario is in the fish business to stay. Those who profess to know the situation after careful study advance the argument that what has happened in connection with the Hydro-Electric proposition, and other utilities the basis of which is the right to use the property of the people for private uses, is happening in connection with the fishery industry. No argument can alter the concrete facts of any situation, and the concrete facts as announced by Hon. Mr. Macdiarmid, are that more fishermen are eager to sign the Government agreement to allocate one-fifth of the total catch to provincial purposes, should they be required, than ever before, and that after six months of initial experience and organization there is a balance of profit in the hands of the Department of \$3,940.

During the recent Session of the Ontario Legislature Hon. Mr. Macdiarmid gave some data in the course of his explanation to the House that may serve as a fair indication of the Ontario Government's intention and position. For the first six months the Province handled 451,760 pounds of fish. The amount paid to the

fishermen aggregated \$26,532.71. Fish from Lake Nipigon figured extensively and the expectation is that they will be a large factor in the approaching season. For the first six months shipments from Lake Nipigon aggregated 161,739 pounds of fish divided as follows: Whitefish, 37,714 pounds, trout, 39,715 pounds, pickerel 5,949 pounds, mullets 26,735 pounds. The winter operations produced 29,921 pounds of whitefish, 15,280 pounds of trout, 325 pounds of pickerel, 4,300 pounds of mullets and 1,800 pounds of ling. The fishermen in Lake Nipigon are not under license, but operate under contract. They receive $4\frac{3}{4}$ cents per pound for whitefish, trout and pickerel, and one cent a pound for mullet. In the winter time the prices ranged from 2 cents a pound for mullets to $8\frac{1}{2}$ cents for the finer fish. Charges incidental to the boxing and icing of fish must be added to this, but in the cold months ice is not required. One feature has impressed those who have given some attention to the subject and that is the overhead charges. What has now been spent on capital account will provide for a very great yield of fish and as the yield increases the cost must be lessened. Some 150,000 pounds of herring and whitefish were purchased from fishermen at other points and sold during the winter, and success has attended so far every move the Province has made. Out of total receipts of \$36,610 the profit announced by the Minister of \$3,940 must be gratifying to him as it will be to many, and it is idle to suppose that in the light of experience these men are not fully informed on the subject that is receiving their attention. No juggling of figures can change the facts, and the intimation has gone forth that the prospects for the provincial fish business are exceptionally bright.

Eat more fish.

The fish eating public has steadily increased as the figures submitted to the Legislature by the Hon. Mr. Macdiarmid will show. The amount of fish distributed through the Government may be expected to increase. The Province sold to Toronto vendors 139,284 pounds, 45,500 pounds in Ottawa, 16,500 pounds in Windsor, 21,200 pounds in Hamilton, 10,000 pounds in Woodstock, 12,300 pounds in London, 14,500 pounds in Guelph, 10,500 pounds in Galt, 18,200 pounds in Port Arthur, and amounts varying from 100 pounds to 6,000 pounds in many other places.

Inquiry at the Food Controller's office elicits the information that the consumption of fish has increased from 25 to 100 per cent. since the prices of meat started to soar, and with reports from all parts of the Dominion announcing the shortage of live stock, there is a certainty that the whole fishing industry will loom materially larger than ever before.—(Com.)

Mackerel have struck in on the Nova Scotia coast, and the stop, although not a large one, as mackerel stops go, is almost a record for the first. To-day the trap at Cranberry-Head took 47 barrels, and that at Byrnes Point took 75 barrels. The fish are of excellent quality and size, running almost two and a half pounds each, they are retailing at 35 cents each. Shipping facilities are in a deplorable condition and there is going to be considerable difficulty in marketing the fish if any quantity is caught. The operators are greatly worked.

ARE FRESH FISH DEALERS ROBBING THE PUBLIC?

M. DURAND

A leading Gloucester daily quoted halibut wholesale at 22 cents per pound, while a large retail store on another page of the paper that same day advertised a 'bargain sale' of halibut at 40 cents per pound. The difference between wholesale and retail prices on other fish offered was in about the same proportion. Cod and haddock, for instance, were then bringing \$3.50 to \$5.50 per cwt. and retailed at 10 cents per pound.

Now, as nearly everyone knows, Gloucester is the greatest fishing port in America and those unfamiliar with the fresh fish business would be inclined to say at once that dealers there are "robbing the public," just as the unthinking charge in Canadian cities. With 'food administrators', 'Market commissioners' and the host of newspaper writers constantly on the watch for anything that may hold possibilities of an investigation, it must be evident that there is justification for the large advance in retail over wholesale fish prices in Gloucester—as well as other cities—or the dealers would soon pay the penalty for extortion.

And this justification is readily discovered by those who take the trouble to dispassionately investigate market conditions in almost any centre. It consists in the fact that fresh fish is nearly the most expensive food product that can be handled. First, it is extremely perishable. The least change in temperature or carelessness in handling will send fresh fish stale in twenty-four hours, or even a shorter period.

Because of its perishable nature, fresh fish must be disposed of quickly. When a vessel arrives at her wharf in Halifax, for example, the firm that purchases her cargo of fresh cod cannot confine its attention to delivering 'three pounds of nice fish by eleven o'clock sure' for the Smith's Friday dinner. There are probably 250,000 pounds to be disposed of in the briefest possible time. That involves telegraphing fish dealers all the way from the Atlantic to the Pacific Coast.

Then come orders that must be checked, packed, re-checked, expressed or freighted to various points scattered over the country. The item of containers alone is a costly one, especially now.

A freight car may not be immediately available. Someone must put in hours telephoning and interviewing railway people before the car is secured and placed for loading. Teams must be found and all the details of loading and shipping attended to carefully and promptly. The car must be iced. If a single one of the many details connected with shipping is neglected, a loss of thousands of dollars may, and often is, met with in a few days. For, no earthly organization is perfect. Mistakes will always be made. The people who make the mistakes, or their employers, pay the price.

When unloading and shipping are completed, there remains the important matter of collecting the money. In most cases, this is done through banks. The book-keeping department of a wholesale fresh fish business is one that requires a large staff and the utmost care, for prices and customers are constantly changing. A volume of correspondence must be handled.

Thus we find that the handling of cargoes of fresh fish, from the wholesaler's standpoint alone, requires (1) weighers and checkers (2) salesmen (3) shippers and packers (4) book-keeping and banking depart-

ments (5) correspondent and stenographers (6) general manager and (7) the employment of a large amount of ready capital and nearly unlimited resourcefulness. To fill these positions efficiently is not an easy matter, and no one worth having can be hired cheaply these days. Without going into details, it may be stated that the overhead expense of a leading wholesale firm in the Nova Scotia fresh fish business today is upwards of \$250,000 per annum. So much for the wholesaler's side of the fresh fish trade.

The retailer must pay for all the above before he can begin to do business. Then come rent, office and selling staffs, delivery, book-keeping, collecting taxes, insurance and interest on investment. By the time Mrs. Smith has her Friday dinner on the table, it has occupied the time and attention of perhaps several hundred persons. Does Smith ever think of that when he grumbles at the high cost of delicious food?

If people ever expect to get fish 'cheap' again, they will have to go back to the primitive method of catching the fish and bringing dinner home themselves. How many, in this age, have time or inclination to thus solve the food problem? Most people will agree that 'live and let live' is a saner policy.

WANTED—CANADIAN CANNED MACKEREL.

A. BROOKER KLUGH.

Among all the fine food fish which we have in Canada there is none better than the mackerel. Excellent and distinctive in flavour, firm of flesh, and free from small bones, the mackerel is of the very highest esculent quality.

The mackerel is an inhabitant of the North Atlantic. On the coast of this continent it is found from Cape Hatteras to the Straits of Belle Isle, while in European waters it occurs from Norway to the Mediterranean.

This species comes in on the coast of North America from a south-easterly direction, first appearing in the spring off Cape Hatteras, in the Bay of Fundy about the middle of May, and in the Gulf of St. Lawrence in June. In the fall they leave Canadian waters early in November.

The spawning grounds of this species are in rather deep water from Long Island to the Gulf of St. Lawrence, and the spawning season extends from May to July, June being the main spawning month.

The mackerel feeds upon the small crustaceans and other small forms of animal life which occur in the sea, its favourite crustacean being the minute copepod known as the "red feed."

Mackerel frequently occur in immense schools, one such school being recorded which was half a mile wide and twenty miles long.

The mackerel fishery in Canada has not increased during recent years, but has rather on the other hand fallen off. Some twenty years ago the catch of Canadian mackerel was valued at about \$2,000,000, while in recent years it has fluctuated between \$800,000 and \$1,600,000. This falling off is not due to any depletion in the supply of mackerel as this species, like the herring, is ocean-wide in its distribution; and is not, like the halibut, lobster and oyster, confined to comparatively narrow limits. The falling off is due to the fact that this fishery is now prosecuted in a rather half-hearted manner.

Of the catch of mackerel in Canadian waters about one-quarter is sold in the fresh condition, the rest

being "pickled." Now there is no fish which suffers more from improper treatment than the mackerel and the condition in which this superb fish reaches the inland markets is most satisfactory. It arrives in the inland towns with no flavour left except that of salt. It is in fact so strongly brined that even hours of soaking fail to reduce its saltiness to a point which renders it in the least degree palatable. I do not for a moment believe that these fish need be so heavily brined in order that they will keep in a satisfactory condition until they reach the consumer, and it would be a distinct gain to the trade in sea-fish in inland localities, which we are doing our best to further, if a few experiments were undertaken to find out the minimum amount of salt which will keep the fish satisfactorily.

But there is a far better way of treating mackerel for inland consumption than by salting, and that is by canning the fresh fish. Before the war we were able to obtain most excellent canned fresh mackerel from Norway—a high-grade product which reached the consumer in a condition very nearly equal to fresh-caught mackerel eaten within a few hours of leaving the water. Now this Norwegian product is entirely off the market and now is the chance for enterprising Canadian canners to put up a really good canned mackerel, an article of such quality that when the war is over and Norwegian fish once again comes into competition with our Canadian product, it will be able to hold the market.

We have the mackerel, we have the factories, and I believe we have the men in the fish-canning business who can, if they devote their attention to the matter, turn out a product equal to that of any other country. I am much gratified by the fact that our sardine factories are now putting out a most excellent product, a product which fulfills the requirements I pointed out in an article on the sardine industry last year. If this can be done with the sardine it can be done with the mackerel.

SOME OBSERVATIONS ON THE EARLIER HISTORY OF THE GRAND BANKS

By COLIN McKAY.

When and how were the Grand Banks of Newfoundland and the lesser banks which lie off the Canadian coast discovered? And by whom were they first exploited?

Every schoolboy knows the story that in 1001 A.D. an Icelander named Bjorn, sailing to Greenland, in search of his father, was swept by a tempest to the coast of Labrador, and that later along with Leif, son of Eric the Red, he organized an expedition, and sailed down the American coast, touching at points in Nova Scotia and New England. But nothing came of these discoveries, and little or nothing was known about them in Europe generally. The next discoverers of America appear to have been French fishermen from the Basque coast; at any rate there is some evidence in support of this claim. These fishermen were hunters of whales; naturally they went farther and farther afield in pursuit of their prey; and it is claimed that some generations before the discoveries of Columbus they were accustomed to make regular voyages to the coasts of Cape Breton and Newfoundland. Of course, they discovered that the waters frequented by whales were also teeming with cod and other fish, and incidentally began to take fish for the markets at home. It is claimed that the Basque fishermen were chasing whales on the Grand Banks a century and a half be-

fore the first voyage of Columbus.

In his *Traite d'Hydrographie*, published in Paris in 1667, R. P. Fournier relates a story giving the credit of being the first discoverer of the Antilles to a Basque navigator. It is recorded that a pilot, a native of Saint-Jean de Luz, trading in a small ship to Madero, was blown to the westward by a succession of heavy storms. After 29 days the wind subsided, and presently an island was sighted—believed to be St. Dominique. After taking wood and water, the ship laboriously made her way back to Europe, and out of the original crew of 17 men, five landed at Ferriere. There they were lodged at the house of Christopher Columbus, then employed making charts; and shortly after, as a result of their hardships and privations, they died. It is concluded that the story told by these returned seamen fired the imagination of the chart maker from Genoa, and induced him to plan that expedition beyond the rim of the known world which opened virgin continents to the feet of the white races.

Whatever may be the truth about these claims concerning the discoveries of the French, there is no doubt that the Basques were pioneers in the prosecution of the Grand Bank fisheries. In a letter addressed to Henry VII. of England in the year 1497, Sebastien Chabot, refers to the Isles of Bacaleos, as if it was an appellation well known; and it cannot be doubted that this name was of Basque origin, since the Basques were the only people in Europe who called cod fish bacaleos, or bacallos. In the "History and Commerce of the English Colonies in the American Hemisphere," the author says: "The French have practiced the fisheries on the Banks of Newfoundland for many years—a long time before the English established themselves on the Island of Newfoundland. According to the accounts of some writers, the Basques frequented the new world."

R. J. Valin in his "Commentaires sur l'Ordonnance de la Marine de 1681," says that the honor of creating the Grand Bank fisheries is due to the French, principally to the Basques of Cap-Breton near Bayonne, who discovered the American continent one hundred years before Columbus. In the development of these fisheries the Basques were soon joined by the Bretons and Normans; and they baptized various banks and places in Newfoundland and Cape Breton with French names retained to this day.

It may be asked why the noise of these discoveries of the Basque fishermen was not bruited abroad, or why the French kings did not early interest themselves in exploiting the possibilities of these new lands? The answer is not difficult. In what they saw of these new lands the ancient fishermen found little to wax enthusiastic about. They saw rock-bound inhospitable coasts, often shrouded in fog and mist, and surrounded by ice floes. The King of France lived far from his Basque subjects, who only owed him a nominal allegiance, and possibly the news of these discoveries never reached his court. In any case, the King would not be interested in maritime matters, as the France in which he exercised any real power did not yet touch the sea. As for the great nobles, they were too busy quarrelling among themselves and with the King in the intervals of the crusades to interest themselves in the exploitation of new lands. So it was not surprising that France made no effort to extend her dominions in the new world until the adventurers who followed Columbus returned with their marvellous tales of lands, clothed in luxuriant vegetation, and filled with fabulous wealth.

Conscripting Pacific Fish for Western Consumers

The Log of a Steam Trawler on the Pacific Ocean.

By CAPT. F. WILLIAM WALLACE.
Canada Food Board.

Steam trawling on the Pacific Coast is not exactly a new venture. I do not know if it has been attempted by American Companies on the Pacific, but some years ago, a Grimsby concern, headed by Sir George Doughty of that British fishing port, operated several steam trawlers out of Vancouver and other ports. The venture was a failure for several reasons, and the steamers which were brought out for the enterprise were sold and converted into hory halibuters and long-liners—the Canadian Fishing Company, of Vancouver, now owning and operating some of the craft.

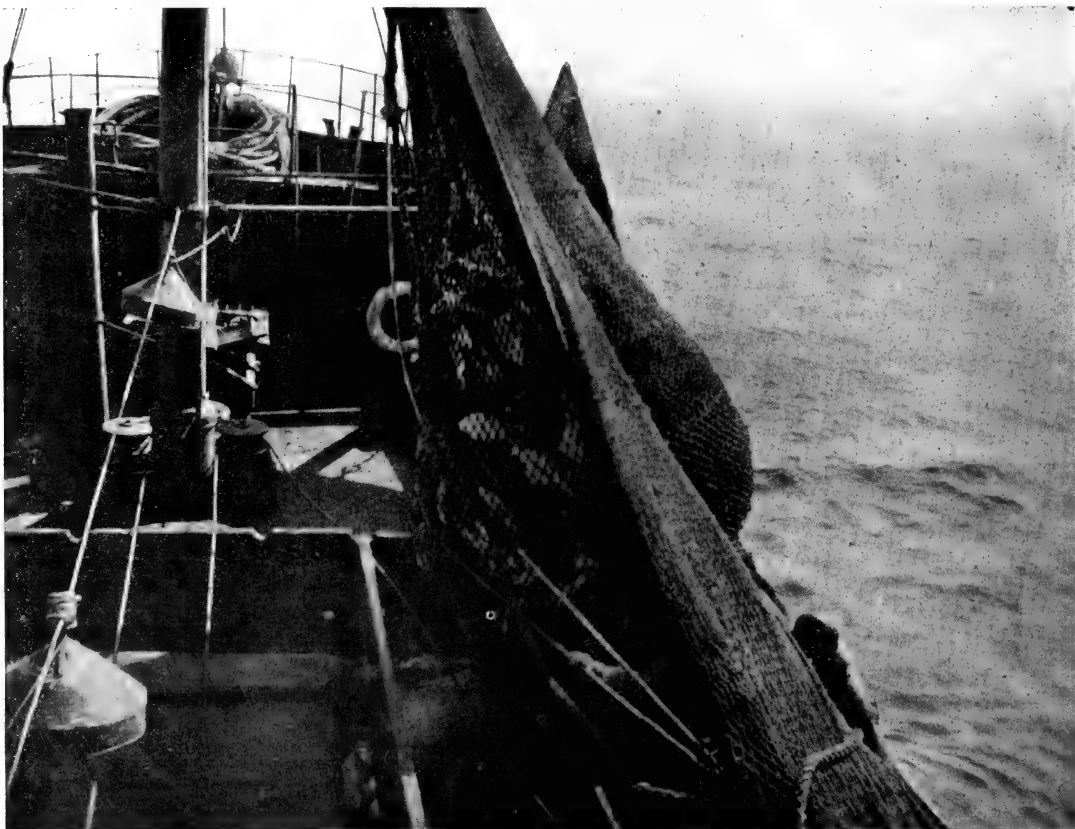
In 1912, the Canadian Fish and Cold Storage Company, Ltd., of Prince Rupert, B.C., brought three new steam trawlers out from England. These vessels—the “Jas. Carruthers,” “G. E. Foster” and “Andrew Kelly”—were equipped as trawlers, but on arrival at Prince Rupert, the trawling gear was discarded and they were fitted out for dory halibuting, and latterly, as steam long-liners. The “Jas. Carruthers” was the

first successful long-liner on the coast, and brought in many large halibut fares by this method of fishing.

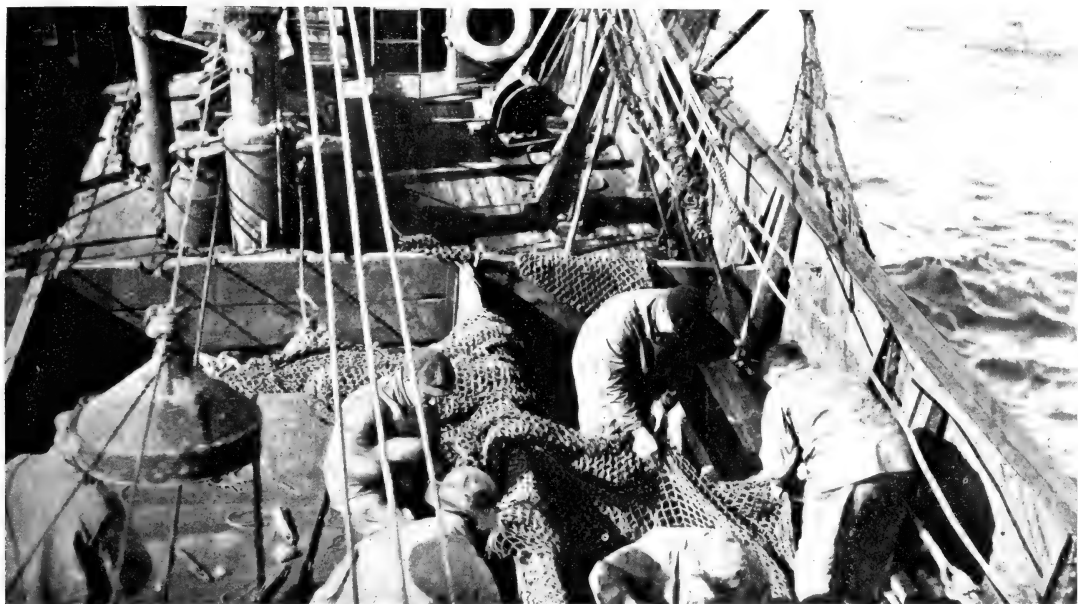
When the price of halibut started to sky-rocket, the “Jas. Carruthers” was again equipped with her trawling gear in 1917, and made several successful trips, but the market for the flatfish and cods caught was poor and the cost of operation made the venture unremunerative.

Halibut prices still soaring, and the consumers of the Western Provinces complaining bitterly of the high cost of the substitute for meat, the Canada Food Board decided to introduce the various Pacific flatfish and cods (except sablefish) as an antidote, and made arrangements to have soles, plaice, brill, witches, skate, red, ling, and grey cod marketed in British Columbia, Alberta, Saskatchewan and Manitoba at a retail price of from 9 to 12 cents a pound.

While a certain quantity of these fish are caught by the halibut fishermen on their hooks, and also by



HEAVING UP A BIG BAG—10,000 LBS. OF FLAT-FISH AND CODS.



REPAIRING THE TRAWL.

small gasoline trawlers, yet it is to steam trawling we must look for the bulk of the supply.

To supply the market being created by the Canada Food Board, the Rupert concern put the steam trawler "Jas. Carruthers" into operation in March, 1918. The writer made two trips on the trawler in April 1918, and had moving pictures made of the operations by an expert camera man. This film, when completed, will be part of the advertising propaganda of the Canada

Food Board in popularizing Pacific flat-fish and cods throughout the western provinces.

The readers of the "Canadian Fisherman" who have read previous logs of the writer on various types of fishing craft—Atlantic and Pacific—may be interested in a brief account of Pacific Coast steam trawling.

The "Jas. Carruthers," built in 1912, is a steel, screw steamer of the regulation English trawler type. She is 95 tons register and equipped with triple ex-



DRESSING FLATFISH.

pansion engines of 75 N.H.P., capable of steaming at an average speed of 10 knots per hour.

Captain Charles Hills—a fishing skipper of 30 years experience in British smacks, trawlers and long-liners—is in command of the "Carruthers" and has been very successful in his trips up to date. The crew comprises 23 men—master, mate, two engineers, two firemen, two coal passers, two deckhands, cook, and twelve fishermen. In Great Britain, a trawler of the "Carruthers" size would be operated by half that number of men.

with 150 fathoms of warp out, we towed for some 75 minutes, and hauled up.

The slack of the net was hauled up by hand after the boards came to the gallows, but the heaviest part of the haul was relieved by using the "lazy-deckie"—stout ropes made fast to the net above the cod-end, and which were carried to the winch. When hove up enough, the strop was passed and the cod end hove aboard by the "Jilson" tackle from the foremast. The cod end draw rope was pulled and a thousand pounds of fish was spilled into the checkers. The cob-end



TEN THOUSAND POUNDS OF FLATFISH AND CODS.

On Saturday, April 13th, at 9 a.m., we left Prince Rupert for the grounds. It was blowing and raining from the S.E. and after clearing the harbor and getting out into Hecate Straits, we found it too rough to fish, so we ran into Qlawdzeit Bay, on Stephen's Island, and let go the anchor. It blew a gale of wind all Saturday and Sunday, but early Monday morning, it moderated and we up anchor, and steamed for the fishing grounds at 4 a.m. At 6 a.m., the skipper picked up his bearings from the mountains on the horizon, and dropped the "Dan" or mark buoy over in 45 fathoms sand. After dropping the buoy, the gear was lowered away—worked on the starboard side—and



HEAVING UP THE SLACK OF THE TRAWL NET.

was made up and with a "Let her ramble!" from the skipper, the gear went over the side again for more conscription of fish.

The edible fish caught were varied. Plaice, soles, red cod, grey cod, long cod, skate, witches, and quite a number of halibut were captured. The usual garbage in the way of dog-fish, long jaws, star fish, ground sharks and rat-fish came into the bag, but the "long-jaws" and "ratfish" were the principal unedible varieties caught.

At this time of the year upon the Two Peaks ground, the plaice, skate and sole are the commonest variety

of flatfish caught. Brill and witches come along, later. Red cod, grey cod and long cod are caught in lesser proportion—the run is usually 75 per cent flatfish and 25 per cent cods.

The great ground sharks—"Okettles," the Grimsby men call them—(a name derived from the Icelandic "Hakell") are the greatest pests. Their rough hides rolling around in the trawl bag over the bottom chafes the net badly, and the great weight of them often bursts the cod end. We caught several of these brutes during the trip—some being 15 feet in length and weighing $2\frac{1}{2}$ tons.

The name "shark" is a misnomer. There is very little shark-like about them except their appetite. They are lazy, logy brutes without a kick in them. While alive, they lay sluggishly on the deck and suffer themselves to be hoisted up with a tackle and rudely handled in the process and there is not a flap

of tail or snap of jaws in protest. They are usually hoisted up by the tail, and the tail is severed below the tackle strop and the carcase drops into the sea—a feast, no doubt, for their brothers below.

After sorting out the fish in the checkers, the scrap is hove out through the supper ports, and the marketable fish gutted and cleaned. Cods are headed at sea. Flatfish are headed and trimmed ashore. When the fish are stowed below in the held, the decks are washed down with a hose.

Hauled the gear about every 75 minutes during the day and throughout the night, and the average catch was 1000 lbs. a haul. The fishing went on without cessation until the morning of April 17th, when it commenced to blow again from the S.E. With a trip of 60,000 lbs. below, we steamed for Prince Rupert and tied up at the dock five hours after leaving the fishing grounds.

The second trip was somewhat similar. After discharging the catch, the trawler left port on the 18th, and steamed to sea. A southeaster sent us into Qlawdzeet Bay (Squadaru) again, and we lay there until the next day. Mervin Larue, an expert camera man from the Pathescope Company, Toronto, accompanied us to film the operation of "conscripting" flatfish and cod.

The first day on the grounds was dull and rainy, but the average hauls of 1000 lbs. per hour was made—day and night. Next day, which was fine and sunny, was ideal for picture taking, and several reels were run off. During the afternoon, we struck good fishing, and while hauling up a record bag of some 10,000 lbs. of fish, the whole cod-end parted while the trawl was coming over the rail, and the fish escaped into the sea. The camera man filmed the accident as it happened. Fishing was delayed for three hours until a new cod-end was spliced on to the net.

Fishing continuously until April 21st, we swung off for Rupert again with another 60,000 lbs. below—thus making two trips within eight days and landing 120,000 lbs. of fish. Barring accidents, and with fine weather, the trawler will average a trip of 100,000 lbs. per week throughout the summer.

The importance of this new departure to the Pacific Fisheries cannot be over-estimated. A market is being created for Pacific fish hitherto but little utilized, and which will be the salvation of the industry when the halibut fishing is played out. It also successfully introduces a method of fishing—the steam trawler—which we predict will become the most popular method in the Pacific fisheries within a few years.



A GROUND SHARK.

Saving the Lobster Industry

By A. BROOKER KLUGH.

The lobster industry is in a bad way—there is no room for doubt about that. We are now faced with the question as to whether we shall let this industry utterly decay or whether we shall attempt to build it up and to restore it to such a condition that it shall continue to yield a good revenue for all time.

If the lobster industry in Canada is to be saved it must be by the co-operation of the Government, the fishermen and the cannery. Everyone concerned in the industry must be willing to look the facts squarely in the face and to forego a little immediate profit

for the sake of the perpetuation of the industry. The only other alternative is the annihilation of the industry. There are undoubtedly some to whom a dime to-day looks larger than a dollar a few years hence, and who would be quite willing to get all they can out of it now and then "stand from under" when the wreck comes. I do not for a moment believe that this is the attitude of the majority of the lobster fishermen and cannery, and it is very necessary that all who have the interest of this industry at heart shall stand squarely behind the Government in any action

which may be taken and that they shall see that the few who will not take part in efforts for the conservation of the industry are brought into line.

In order that we may appreciate the serious decline of the lobster industry, let us look for a moment at the figures for the past twenty years. In 1897 there were 1,156,352 traps, in which were caught enough lobsters to provide 25,183,100 pounds of live lobsters and 11,130,554 pounds of canned lobster, or an average per trap of 31.6 pounds.

In 1906 there were 1,268,866 traps which provided 9,749,000 pounds of live lobsters and 10,104,764 pounds of canned lobsters, or an average per trap of 14.8 pounds.

In 1915 there were 1,596,538 traps which provided 8,682,400 pounds of live lobsters and 7,723,296 pounds of canned lobster or an average per trap of 9.8 pounds.

Thus, considering only the total catch, we see that the lobster fishery has declined three hundred per cent in twenty years. This in itself is serious enough but it is not the only serious aspect of the situation. The great decrease in the number of "berried" lobsters and the decrease in size of the lobsters caught are equally ominous.

In regard to the number of "berried" lobsters, that is females carrying eggs, we have the following data. The late J. H. Duvar, Fishery Inspector for Prince Edward Island, in his annual report for 1880, says:

"The total proportion of lobsters in spawn does not, in most cases, as reported to me, exceed 10 per cent of the whole Island catch of both sexes. This shows that 1.5 of the females (20 per cent) carry ova."

In 1890 Lieutenant R. A. Gordon, of the Fisheries Protective service estimated that 66 per cent of the females caught carried eggs.

During the summer of 1916 and again in 1917, Mr. Andrew Halkett was, at the request of the Biological Board, detailed by the Fisheries Department to go out with the fishermen and ascertain the relative numbers of males and females and the percentage of berried females. His averages for 1916 were 3.2 per cent of females with eggs and in 1917 5.3 per cent.

Here we have then a decrease from 20 per cent (taking the lowest of the older figures to 5 per cent (taking the highest of the recent figures), that is, a decrease of 400 per cent in the numbers of berried females.

Now with regard to decrease in size. In 1873 it was found that the average weight of the lobsters caught was 2.9 pounds. In 1909 the average weight was 1 pound 3 ounces. Since 1909 there has been a further decline as is shown by the following measurements by Mr. Halkett:—

Out of 2,929 lobsters measured in 1901, 12 were between 7 and 8 inches; 253 between 8 and 9; 1,153 between 8 and 10; 1,180 between 10 and 11; 288 between 11 and 12; 38 between 12 and 13; and 2 between 13 and 14 inches in length.

Out of 508 measured in 1917, one was between 5 and 6 inches; 29 were between 6 and 7 inches; 91 between 7 and 8; 197 between 8 and 9; 132 between 9 and 10; 38 between 10 and 11; 11 between 11 and 12; 8 between 12 and 13; and 1 between 13 and 14 inches.

These figures show that whereas in 1909 the bulk of the lobsters caught were between 9 and 11 inches in length, in 1917 the bulk were between 7 and 10 inches. This shows a very serious decrease in size in the past eight years, and the seriousness of this aspect of the situation becomes all the more apparent when we come

to study the egg-fertility of females of different sizes, as shown in the following table:

Size.	Age.	Number of eggs produced.
8-10 ins	4 yrs.	5,000
10 ins.	5	10,000
12 ins.	6-7	20,000
14 ins.	10	40,000
16 ins.	15	60,000-80,000
18 ins.	18	100,000

This means that as breeders 20 9-inch lobsters are only equal to one 18-inch lobster.

Now that we have examined the figures which show so conclusively the great decline in the lobster industry we should enquire into the causes of this decline. These we may enumerate as follows:

1. Over-fishing.
2. "Brushing" the eggs off the berried females and selling these mother lobsters.
3. Fishing being carried on between June 1st and Oct. 1st when the mother lobsters are hatching their eggs or laying their eggs.
4. The canning of very large numbers of small lobsters—6—10 inches in length.
5. The destruction of immense numbers of eggs in the hatcheries for the past 25 years.

What steps may be taken to save this industry? The first step has already been taken. Acting upon the advice of Dr. A. P. Knight of the Biological Board of Canada the Department of Naval Service has closed the lobster hatcheries. For many years Dr. Knight and other biologists who have made a careful study of the lobster have pointed out that the hatcheries were not only failing to accomplish their purpose but entailed a waste of lobster eggs and of money. The hatcheries were established on the assumption that they would be as successful as fish hatcheries. But the fact that the habits of lobsters and of fish in regard to egg-laying are totally different was overlooked. The eggs of fishes are, in the great majority of cases and in the case of all commercial fishes, extruded from the body of the female and then left. The spawn is then at the mercy of every animal which cares to feed upon it—and their name is legion. Therefore if the eggs are collected, hatched with care, and the young fry raised until they are able to some degree at least to look after themselves, an immense conservation of eggs results. But the eggs of the lobster are not left by the mother to their fate, they are carried about on the body of the female, they are carefully aerated and protected, with the result that a very high percentage, in fact we might say all the fertilized eggs, hatch out. It is true that once the young lobsters are hatched they are left to shift for themselves and are at the mercy of their foes. But the hatcheries did no more than hatch the eggs and then dump the young lobsters into the sea in an equally defenceless condition, or in fact under rather more adverse conditions than when hatched by the mother, as instead of being liberated a comparatively few at a given place and time, they were put into the sea in large quantities at one place, thus attracting hosts of enemies. Further, the hatcheries did not succeed in hatching anything like the same percentage of eggs as the mother lobster. Careful investigation into the number of eggs hatched at one hatchery showed that out of 71,000,000 eggs received, only 15,000,000 hatched. At the same hatchery the next season,

when the hatchery staff made every effort to improve the output, doing everything in their power to make the methods as efficient as possible, 30,000,000 eggs out of 78,000,000 hatched—that is 40 per cent. At another hatchery only 100,000 out of 61,000,000 eggs were hatched, and at a third hatchery only 750,000 out of 195,000,000 eggs received were hatched. These terribly low percentages show that the hatcheries have been an absolute failure, not, be it understood, because of negligence on the part of the staffs of the hatcheries, but because the method was wrong. For one thing, the eggs were often received in no condition to hatch. As early as 1891 this was pointed out by Fish Commissioner Wilmott, who says in his report: "It will be perfectly useless ever to anticipate any successful results at the hatchery by allowing the fishermen or factory hands to gather the eggs from the female lobster. Millions and millions of the ova taken in this manner at the outlying factories and sent to the hatcheries proved to be useless. Only some seven millions of fry were put out from 70 to 80 millions of eggs."

When the futility of the lobster hatcheries was realized, the first most obvious step was to try and find a method which would hatch out a high percentage of young lobsters and then raise these lobsterlings to the fourth stage, that is to the stage at which they first attain the habits of the adults. In the first three stages the young lobsters swim aimlessly about, at or near the surface of the water—a prey to every carnivorous creature of the sea. The extent to which they are destroyed by their enemies is shown by some work which I did at Leonardville, N.B. in 1913. Anchored a little distance off shore was a large lobster cage in which were a number of female lobsters carrying mature eggs. Every evening between seven and eight o'clock a vast number of young would hatch out, and they would be swarming in the cage and in the water immediately about it. Yet early the next morning when I drew a tow-net, a net of mesh so fine that it would have caught any young lobsters in its path, since it gathered up myriads of crustacea ten times as small as first-stage lobsters, round and round the cage, both close to it and at some distance from it, not a single young lobster was I able to find. When the young lobsters reach the fourth stage, that is, after their third moult, they seek the bottom and are able to hide in crevices from their enemies. The problem then was to raise the young to this stage—and a problem indeed it proved. The young lobsters evinced more ways of dying than anyone had ever dreamed of. They died if the water was not sufficiently aerated, they sank in masses to the bottom and smothered one another, they died of starvation if not presented with enough food and if given too much, the unused food decayed and poisoned them, those which had not yet moulted ate those which had just moulted, and were "soft-shelled," if the water was too warm they died, and if it was too cold they did not grow and moult properly. These various difficulties were overcome in various ways, but new difficulties arose, the chief ones being diseases and superabundant growth of diatoms—microscopic water plants—on the young lobsters which choked up their gills and suffocated them. No method of combatting these last difficulties has been found, and after many years of arduous effort the raising of lobsters to the fourth stage has been abandoned as impracticable.

As soon as it became obvious that it was futile to

try and raise lobsters to the fourth stage, Dr. Knight began another series of experiments. His main idea was that the number of "berried" lobsters (from 3.2 per cent to 5.3 per cent, as we have already seen) was far too low, and that one effective method of conservation would be to raise this percentage very materially. He arrived at the conclusion that this low percentage was very largely due to the fact that through over-fishing the numbers of sexually mature lobsters had been so reduced that they were scattered singly about the bottom, that, in other words it was pretty much of an accident if a pair should meet and mate. He accordingly confined a good number of adults—males and females—in compartments, some 10 by 10 feet, others 10 by 20 feet. The results have been gratifying in the extreme as for three years it has been found that from 40 per cent to 64 per cent of the females produced eggs.

Here then, is one really practical manner in which the lobster supply may be conserved—a way so easy and so cheap that any lobster fisherman may practice it. All that is necessary is a compartment, which would cost about twelve dollars to build. This should be stocked with males and females thirteen inches or over, and the only other labour entailed would be feeding.

Another way in which the supply of lobsters may be maintained is by establishing sanctuaries in which a good number of the large lobsters, thirteen to eighteen inches in length, may be placed and kept as breeders. Such sanctuaries would be bays, the mouths of which were closed off with netting and they would of course have to be carefully protected against poachers. These sanctuaries would be maintained by the Government, and when the area thus enclosed became over-stocked licenses to fish in these areas on payment of a special license fee, which would contribute towards cost of maintenance, could be granted.

That the methods outlined above may bring about an increase in the lobster supply it is absolutely essential that there be no over-fishing and no "brushing" of berried females. If these practices are persisted in the doom of the lobster industry is sealed, no matter what other efforts are made to save it. In order that there may be no over-fishing there must be one universal close season—from June 1st to Sept. 30th, and no lobsters under 10½ inches in length must be taken. It may be necessary to raise the size limit to 11 or even 12 inches, if evidences of over-fishing still persist with a 10½ inch limit. In regard to "brushing" eggs, it must be brought home to every fisherman that this is a criminal operation, an offence against not only the law, but against the others engaged in this occupation and also against his own ultimate welfare.

I have now pointed out the critical condition of the lobster industry, the reasons for this condition and the steps which must be taken if the industry is to be saved, and I would now emphasize the fact that it is the duty of all who have any interest in this industry to do their best to bring home to those who through either ignorance or selfishness refuse to help in the saving of the industry.

In conclusion, I wish to acknowledge the kindness of Dr. Knight in placing at my disposal most valuable data on this important subject.

The British Fisheries

2. Their Rise and Development.

The story of the rise and development of the British sea fisheries to the great position they occupied before the outbreak of war is one of singular interest. For a long period before 1914 the results in any one year, both in regard to quantity of fish and value realised were almost invariably better than in the preceding year—the movement was always upwards. In 1890 the quantity of "wet" or "green" fish landed in the United Kingdom amounted to 12,774,000 cwts. and the value to £6,361,000. In 1913 the quantity was 24,657,000 hundredweights, and the value £14,229,000, so that in the twenty-four years the quantity had almost, and the value more than, doubled. But in 1890 the fisheries were firmly established on the same lines as in 1913. One must go a little earlier to discover the causes which led to their great development, and it may be at once said that with one notable exception which concerns the herring fishing and industry and is alluded to later, their immense progress has been due not to active assistance from the State, but to the energy and enterprise of individuals who knew how to take advantage of the opportunities that offered. The industry has gradually been built up by private effort. To go back no further than about one hundred years ago it will be found that at that time a large part of the fish supply was obtained from foreigners, and especially from the Dutch. They supplied London with a considerable part of the turbot and live cod which were consumed, getting supplies of lamprey bait mostly from the Thames. These supplies were supplemented by English smacks fishing principally from the Thames and ports adjacent, notably Harwich. There were the herring fisheries and the mackerel fisheries and a good deal of inshore line-fishing as well as inshore trawling from small boats with small trawls, much as it was practised centuries before. There was practically no deep-sea fishing and no deep-sea trawling, which was later, as it is now, the outstanding feature of the English fisheries.

Railways: Ice: Steam.

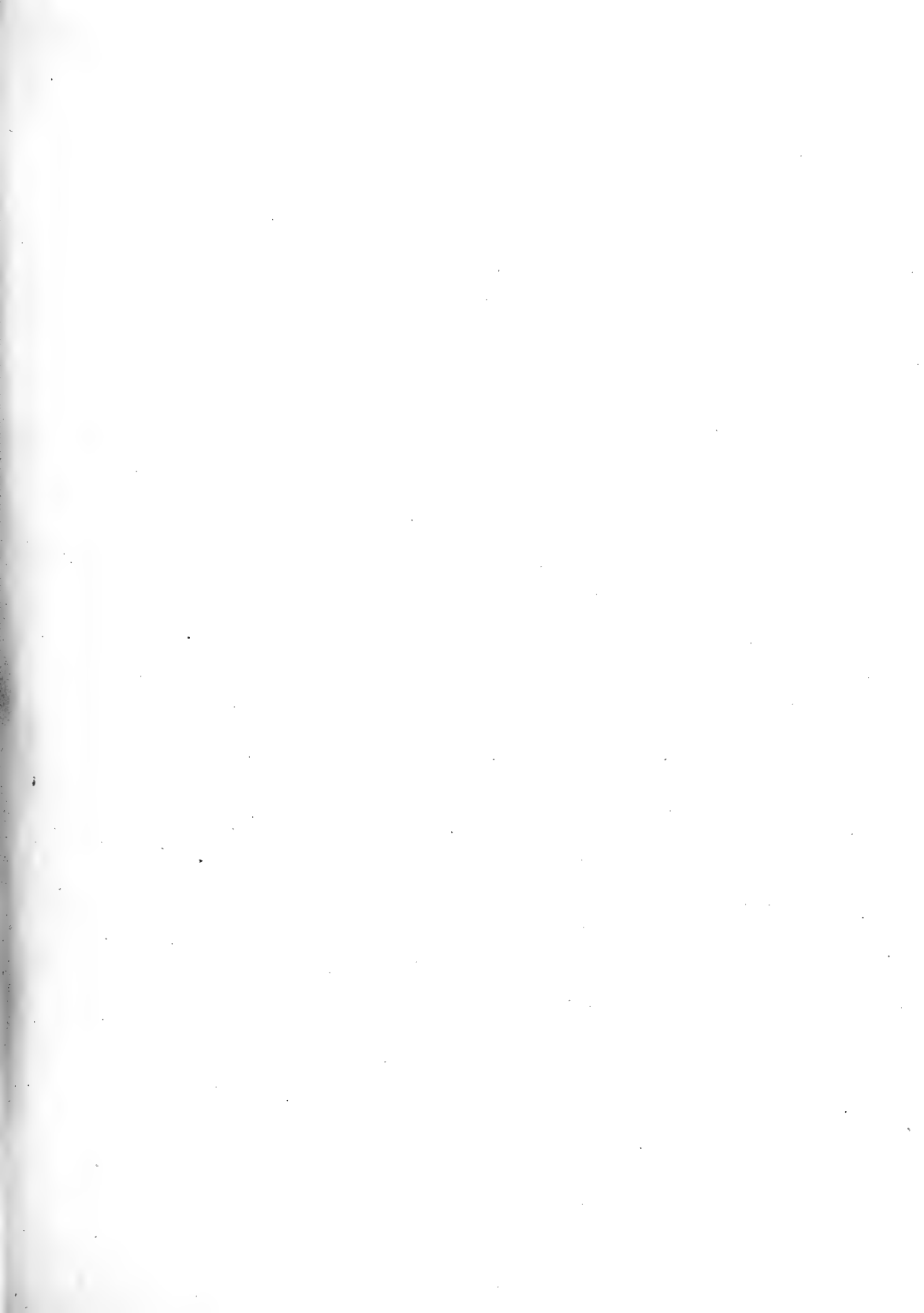
These are the three chief factors which materially aided in the development of the fisheries last century. In the earlier part and middle of the century the extension of railways all over the country gradually opened up markets which were formerly inaccessible, and this great advance in the facilities of distribution, especially to inland manufacturing centres, immensely increased the demand for fish and stimulated the fishing industry. Previously the fish landed were consumed in far greater proportion than they are now on the coast, in the vicinity of where they were landed. Billingsgate, which was then as now the great market, received most of its supplies by water-carriage, and this was the case for a considerable time after railways were in existence. Such fresh fish as were sent inland were carried by carts or in the stage coaches, and the supplies were necessarily small. The advantage of railway carriage in developing the fishing industry may be illustrated from the case of Grimsby, the premier fishing port of the world. In 1856, before railway connection, the quantity of fish landed at that port was 1,514 tons; in 1859, when rail-

way communication was established, the quantity was 4,742 tons; ten years later it had risen to 24,140 tons; in 1913 it amounted to no less than 179,250 tons. Railways now tap almost all parts of the coast, and fish are distributed to the most distant places. In 1884 the British railways carried 326,802 tons of fish; in 1913 the quantity had risen to 731,040 tons.

Of scarcely less importance than the introduction of railways was the use of ice for the preservation of the fish in a fresh condition. The use of ice indeed revolutionised the industry and liberated the fishing vessels from the bonds that tied them to the coastal waters. It is curious that although ice was used to preserve fresh salmon sent from Scotland to Billingsgate by cutters towards the end of the eighteenth century, it was not employed in the sea fisheries until about fifty years ago. It was first used by fishmongers, and then to preserve the fish immediately they were landed by the smacks; but very soon the trawlers took to sea with them a supply in their "ice-box," and the practice rapidly extended. The credit of first employing ice to preserve the fish on board is due to a Mr. Samuel Hewett, who owned a fleet of sailing trawlers which fished from Yarmouth. Nearly all the ice was imported from Norway, though considerable quantities were procured from Norfolk and Lincolnshire. Now it is nearly all made locally. By employing ice the smacks were enabled to remain at sea and extend their fishing grounds, and they received further supplies, if necessary, from the carriers which collected their fish. In 1872 about 22,000 tons of ice were imported at Grimsby and nearly 20,000 tons at Hull. The value of the ice in preserving the fish during distribution was hardly less than its value on board ship, and no improvement or invention has done more for the development of the fishing industry in all the branches of the fresh-fish trade. It has been remarked that it enable the fishing vessels to stay long at sea and visit distant grounds. It also made possible the use of steamers in fishing instead of the sailing vessels, though this improvement was rather long in coming. Steam was employed first on the carriers bringing the fish from the fleet to Billingsgate, and then steam tugs were used to tow into port both sailing trawlers and herring boats and sometimes to tow sailing carriers up the Thames. It was an easy transition to place a trawl-net on a tug boat and to adapt it for fishing, and this was what was done, but it was not till early in the 'eighties that the owners succeeded in making it pay. Steam trawling had been tried as early as 1872, but it was abandoned as unprofitable. The story of the further development of steam fishing belongs to trawling, and something may be said about the history of this great method of fishing.

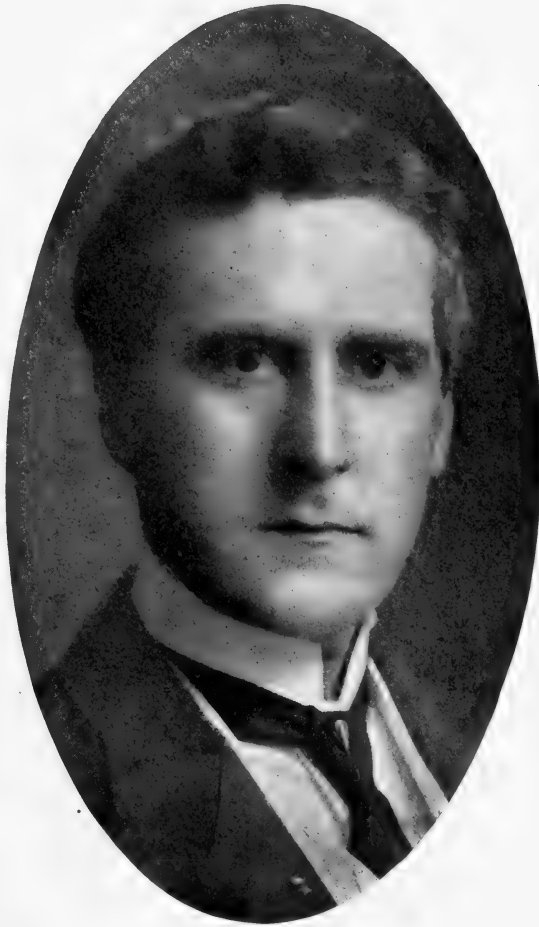
The Development of Trawling.

A good deal has been written about trawling, but the writers are usually somewhat astray as to its origin. It is generally supposed that it began rather over a century ago, during the time of the Napoleonic wars, either at Barking on the Thames, or at Brixham, in Devonshire. Its use was really much earlier. A petition to Parliament in the reign of Edward III., in the session of 1376-1377, stated that a net, made

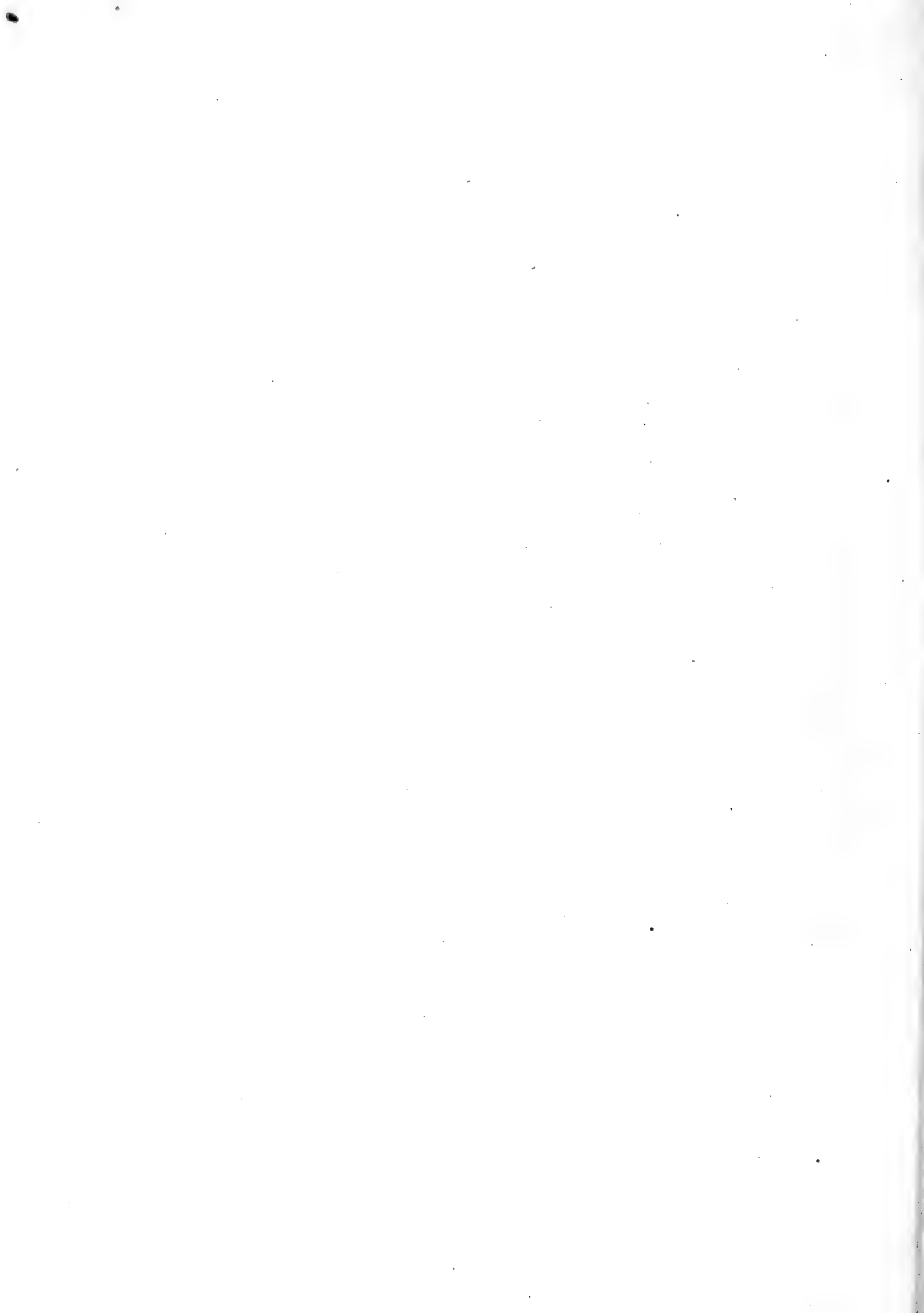




CAPTAIN FRED. WALLACE, Ottawa, Ont.
Member of Executive, The Canadian Fisheries Association.



JOS. T. O'CONNOR, Montreal, Que.
Director, The Canadian Fisheries Association.



after the fashion of an oyster-dredge, and called a "Wondyrehoum," captured all small fish that entered it and destroyed the brood and spawn of fish. In the reign of Elizabeth and the early Stuarts there is full evidence of the use of these small trawls along all the coast at the mouth of the Thames, from the North Foreland to Harwich. On the ground that they were destroying the fisheries they were from time to time seized by the Admiralty and burned in heaps. It was this style of small trawl that was in existence at the beginning of last century, when the close of the French wars gave an impetus to the fisheries. The trawls were then so small that they could be carried with ease on a man's shoulder, the beams being about 18 feet in length. Fishing was confined to estuaries and bays, in comparatively shallow water. Gradually boats and nets got larger and the trawling was carried further afield. About 1818 Brixham trawlers migrated to Dover, trawling in Rye Bay and vicinity; the industry was established at Ramsgate and Harwich in 1828; by 1830 the southern part of the Dutch coast was visited; the Dogger Bank was first trawled over about 1835, and then only the southern part; by 1860 the German Bight was visited, by 1870 there was a great extension, trawling being prosecuted on the rest of the Dogger Bank and off the whole west coast of Denmark, and in 1875 the Great Fisher Bank was visited, and within the next few years it may be said the whole of the trawlable grounds in the North sea were opened up. An immense impetus was given to the industry in 1837 by the accidental discovery of the famous sole grounds, the Great Silver Pit, by a Hull trawler. The exploitation of the North Sea in this way was almost entirely done by men from the south, from Brixham and vicinity, who at first confining their operations to summer voyages finally settled down at Hull and then at Grimsby in 1858. It is exactly sixty years since the first trawlers started fishing from Grimsby. All this time of course the boats were getting larger and larger and multiplying in numbers, and the nets were increasing in size in like ratio, and a great fleet of sailing trawlers was gradually built up. In 1830 there were about 200 trawling smacks; in 1863 about 955; in 1883 about 3,000; since then they have diminished in numbers owing to their displacement by steamers, as will be explained in the next article which will deal with the trawl fishery.

The Development of the Herring Fisheries.

The origin of the British herring fishery is lost in the mists of antiquity, but many centuries ago there were great fisheries at Great Yarmouth and Lowestoft, and lesser fisheries elsewhere and in the firths and fjords of Scotland. While the trawl fishery has always had as its main object the supply of fresh fish, the chief aim of the herring fishery is to provide cured herrings for exportation. About 80 per cent. of the herrings landed are now exported, mostly in pickle to the Continent, Russia and Germany being the chief normal markets. For a very long period the Dutch had a practical monopoly in supplying the Continental market, and hence a prolonged struggle took place on the part of the British curers to get a share in this profitable business. They have succeeded in getting not only a share, but by far the bigger share; the value of the cured herrings exported in 1913 was £5,331,000, the value to Germany being £2,267,000 and to Russia £1,988,000. It would take too long to tell the story of how this was accomplished,

but the main points may be summarized. In connection with the development of the herring fishery the State took a prominent part, and at first a part which was distinctly prejudicial, at least from the fishery side. In the latter half of the eighteenth century we were involved in almost constant naval wars and there was urgent need of seamen for the navy. It was thought by the Government that they could hit two birds with one stone by creating a deep-sea herring fishery after the system practised by the Dutch, which would supply both excellent herrings, and excellent men for the ships-of-war. The bounty system was therefore introduced with the object of creating a fleet of herring fishing "busses," the herrings to be cured on board as the Dutch did. Curing on board was, however, a necessity for the Dutch, who, since herrings do not frequent the coasts of Holland, had to come to the British coasts for them, where they fished all the summer and autumn, from the Shetland Isles to the Thames, returning with their cargoes of pickled fish. Many hundreds of thousands of pounds were spent on this project without advantage and it delayed the application of the true method of development. The herring fishing was developed by the gradual evolution of the shore fishery which existed, the herrings being landed and cured on shore. The boats were everywhere open; they became half-decked and then wholly decked, and larger and larger as the herrings were sought farther and farther offshore, and finally came the steam-drifter and the motor-drifter, as will be described in a later article. But if the State made a mistake in the "buss" project, they accomplished an immense amount of good by the institution of a special Board with a trained staff to guide and instruct the industry, and of a "brand" on each barrel of herrings, cured satisfactorily according to regulations. The Commissioners of the British White Herring Fishery were appointed in 1808, and had charge of the fisheries around the whole British coasts. The coast was divided into districts and fishery officers appointed to supervise the curing and packing of herrings. Later the English stations were abolished, and in 1882 the Board became the Fishery Board for Scotland. The tonnage bounties were continued by the Commissioners and did not altogether cease until 1824. Bounties of two shillings, later raised to four shillings, on each barrel cured and branded were paid from 1809 to 1829, after which all the bounties ceased. In the twenty-one years following the establishment of the British White Herring Board the State subsidized the herring fisheries to the extent of £775,101, or an average of £37,000 a year. In some years the tonnage bounty amounted to over £20,000, and the total for the sixteen years was £114,514. The barrel bounties in some years exceeded £70,000, and aggregated £660,587. Even more important than the export bounties, except perhaps in the very early years, was the constant care taken to guide and drill the fishermen and curers in the true principles of their industry if success was to be achieved. No pains were spared in this. Every detail was closely attended to. The construction of the barrels—an important item—the treatment of the herrings from the moment they were landed, their assortment, curing and packing all received attention from skilled men. Herrings may abound on a coast and great fisheries be possible. Unless means be taken for their proper cure for the markets they may be of little value.

Fisheries Research in the Gulf of St. Lawrence in 1917

By A. G. HUNTSMAN,
Biologist to the Biological Board of Canada.

In the spring of 1917 an expedition was planned to investigate the region at the northern end of Cape Breton island, where the waters of the gulf of St. Lawrence flow out into the Atlantic on the south side of Cabot strait. In the middle of May the motor-boat "Prince," named after Professor E. E. Prince, Commissioner of Fisheries for the Dominion and Chairman of the Biological Board of Canada, was taken from the Atlantic Biological Station at St. Andrews, New Brunswick, in the Bay of Fundy, around Nova Scotia to Cape Breton island. Mr. Arthur Calder and Captain Elmer Rigby were in charge of the boat and carried out the various fishing operations and experiments most efficiently. Eastern Harbor, on the western side of Cape Breton island, served as our headquarters for the summer, and proved to be most suitable as a base from which to study the neighboring waters. We were much indebted to Mr. Clifford Le Couteur, the capable local manager for the firm of Robin, Jones & Whitman for many courtesies extended to us during the course of the summer . . . A commodious house that

happened to be vacant, was placed at our disposal and proved to be an excellent laboratory for the carrying on of the microscopic and other detailed examinations of the material that was collected. Each month from May to September the condition of the waters between our base and the Magdalen islands was determined by making observations at a series of selected stations, additional trips being made up and down the coast of Cape Breton to examine other localities. In particular an examination was made of Aspy bay just east of Cape North and of the water at different depths out into Cabot strait, where we were successful in operating both our net trawl and fish fry trawl at a depth of 200 fathoms in spite of the small size of our boat (60 feet.) Many rare and curious forms were obtained in that deep channel which deserves to be more thoroughly investigated. On the chart (figure 1) have been marked the various stations that were occupied during the summer in the course of our work, of which those in the vicinity of Eastern Harbor and at the Magdalen islands were visited repeatedly.

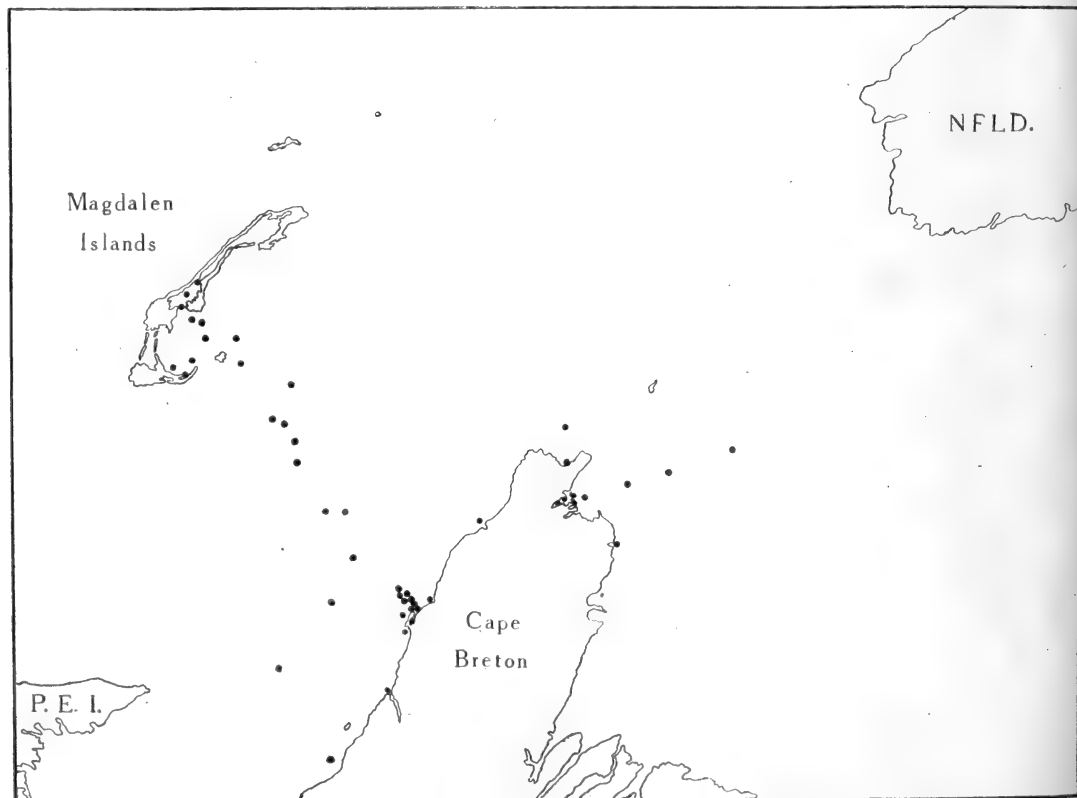
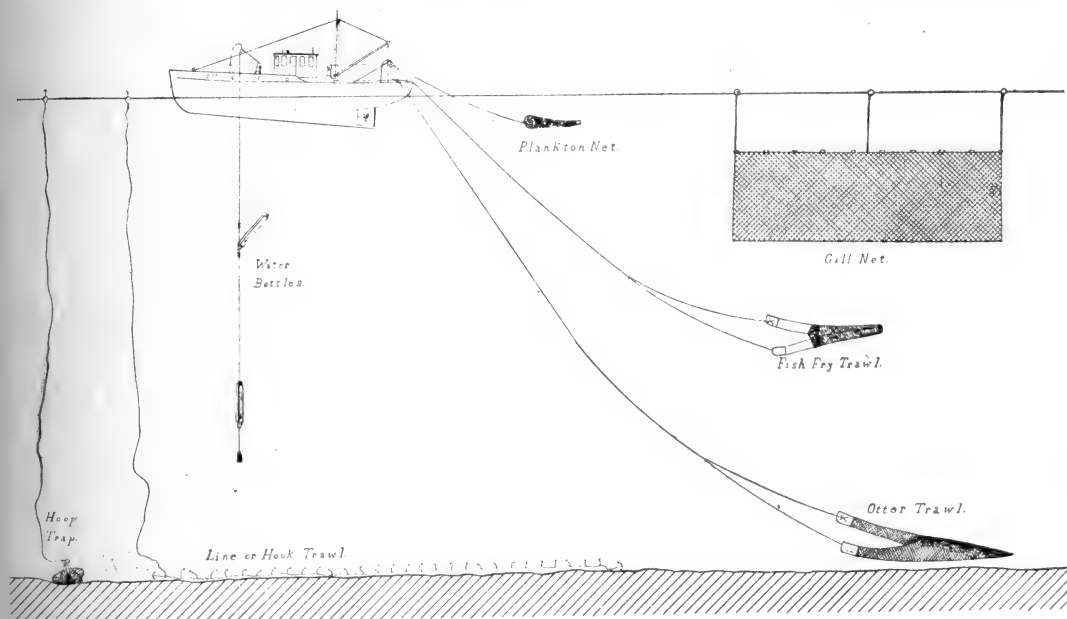


Chart showing the region investigated and the stations occupied in 1917.

Nature of the Work:

A great variety of methods and gear must be used to discover what kinds of animals there are in the water, where they remain, and how they live. We have shown in the illustration (figure 2) how some of the gear is employed, although, of course, only one or two kinds are used at a time. First and foremost come the usual fishing implements:— The **drag seine**, which is a net that is run out into the water in the form of a semi-circle with the open side towards the shore and is then hauled up on the beach by means of a line at each end, gave us the shore fishes such as trout, young salmon, alewives, small herring, capelin, cunners, white perch, sculpins, tomcod, young hake, flounders, dabs, window-panes, smelt, mummichogs, sticklebacks, pipe fish, sand lance and butterfish. anchor and buoy at each end and left a variable length of time before hauling. It catches a variety of fishes depending upon the place where it is set, but we may mention the following: Cod, haddock, hake, pollack, flounder, plaice, halibut, mutton-fish, sculpin, skate,

as a kite, for just as a kite tends to rise when hauled through the air, so do these boards tend to go one to one side and the other to the other, when hauled through the water. The net trawl is operated in mid-water or on bottom and takes whatever fish there are at that level, supposing that it is of the right size and mesh and is towed rapidly enough through the water. We obtained with it cod, plaice, sole, hake, flounder, smelt, cunner, butterfish, dab, skate, sculpin, grenadier, lobster and spider crab, as well as many of the small bottom animals. Our trawl was small, being designed for catching shrimp, of which we obtained various kinds, but it was quite successful in taking the large fishes as well, for we have brought up in it after one hour's hauling as much as five hundred pounds of fish, including one that weighed fifty pounds. The **fish-fry trawl** is a similar trawl, but small and made of sacking and without any funnel. It takes the smaller animals in the water, including the young fishes, and occasionally even quite large ones. For the fish eggs and the very small animals and plants that swarm in



Types of Gear Worked With.

and grey-fish. The **gill-net**, of which we used various meshes, is a net set vertically at any depth in the water, into which the fishes run during the night and become enmeshed. Herring, mackerel, smelt and gray-fish are caught in this way, and also many others such as cunner, hake, sculpins, and cod, when the net is in the right locality. The **net trawl**, which is towed through the water, is a long net bag with a broad mouth and a funnel about half way along on the inside, which permits the fish to readily reach the small "cod" end, but keeps them from getting out again. The mouth is kept open, either by a stout beam, or, as is more usual now, by means of "otter" boards, one at the end of each of the two "wings" of the trawl, to which the wire cables for hauling are attached. These "otter" boards act in the same way

the water, what are called "**plankton**" nets are used. Plankton is a name given to the floating organisms of the water, which are legion. The nets are made of the silk bolting cloth, used by millers for sifting flour, the coarsest of which will stop anything as large as one-sixteenth of an inch in diameter, while the finest will permit only those less than one two-hundredths of an inch in diameter to pass out. These nets are of various sizes and are towed through the water at various depths, and by their means we were able to trace the spawning and development of the fishes with floating eggs, as well as to determine the distribution of the numerous animals and minute plants that serve as food for the fry of the fishes and even for some of the adults, such as the herring and mackerel. The **dredge**, which is merely a rectangular iron frame, to which a

bag of net or sacking is attached, was used for dragging on bottom to get samples of the varied animals and seaweeds that populate the ocean floor so densely and from the food of the many bottom-living fishes. It also gave us some of the bottom material: stones, sand, mud, etc., in which or on the surface of which the animals live. Small traps or pots made of laths are ordinarily used for catching crawling animals like the lobster, but for this purpose we used simple **hoop traps**, which were under the direction of Captain Rigby. Each of these consisted of an old waggon tire to which was attached a short bag of fine-meshed net. The trap was baited with dead fish and lowered to the bottom, a buoy being left attached to the line. Although there was nothing to prevent the animals that gathered around the bait from leaving the trap at any time, we found that this apparatus was as effective in capturing lobsters and crabs, as the ordinary lobster pot and had the advantage of taking animals of any size from the largest of them to the smallest that failed to go through the net. Fish also were taken, cunners being captured in it regularly when it was placed near shore where they lived. By means of these traps we discovered that a barren zone existed off the Cape Breton shore, comprising the part of the sloping bottom between the depths of 10 and 20 fathoms. In this zone the temperature at the bottom underwent violent fluctuations often in the course of a day or so, at one time being as high as 65° F., and at another as low as 39° F. This was caused by the winds, for when the wind was blowing on shore it drove the surface water against the coast and heaped it up, forcing the deeper colder water down, then when it changed and blew off-shore the warm surface water was driven away from the coast and the cold water welled up from below to take its place and so flooded the zone. The effect of this on the slow moving bottom animals may be imagined. Few of them would be able to stand such changes, but the active fishes are able to move up and down the slope and avoid these changes, and in fact we caught the cold-loving cod and haddock in large numbers in this zone, when the temperature was low. The importance, to any one who is fishing, of knowing what the temperature at the bottom is in such cases, is obvious, for when the cold water up-wells and comes nearer shore, the fishes will follow it and may be caught without the fisherman having to go as far from land as at other times.

Hand-lines for catching fish with baited hooks and **jigs** of lead with many hooks, we used only occasionally.

Another important part of the work was the determining of the physical conditions in the water. Most important of these is the temperature, which was taken regularly during the whole summer at definite depths from the surface to the bottom at the stations between Cape Breton and the Magdalen islands. For this purpose special **thermometers** were used, which were lowered to the desired depths, left a few nights and then turned over by letting slide down the line a weight, which released the upper end of the thermometer case. The thermometer on being turned over registered the temperature at the moment in just the same way that a clinical thermometer registers one's temperature on being removed from the mouth. Samples of the water were obtained from the same depths by using a brass water bottle, which automatically closed on turning over and so imprisoned water from the desired depth. The many samples of water, that were collected, are

being examined chemically by Professor Vachon of Laval University, in order to determine how much salt they contain. In this way we learn how the physical conditions in those waters changed during the course of the summer, and that gives us the explanation of the movements of the fishes.

Investigations:

The primary object of the expedition was to obtain as much information as possible concerning the undeveloped fishery resources of the region. Particular attention was paid to the lump-fish by Professor Cox, to the cunner by Mr. Johnson, and to the plaice by myself. The many facts learned concerning their abundance, edibility, life histories, etc., will be dealt with in special accounts and need not be detailed here. In the utilization of each fish special problems are presented, which require careful consideration before any very definite statement can be made as to the prospects of their proving of importance.

Another object we had in view in going to that part of the Gulf was to determine the fate of the vast quantities of herring eggs spawned at the Magdalen islands. We were able to study this question only incidentally, on the trips made monthly to the Magdalen islands. The spring spawning takes place during May and is practically confined to the shores of Pleasant bay. The hatching of the eggs was virtually completed by the middle of June and the very small fry were found on the 19th and 20th of that month to form a vast unbroken swarm, extending from Pleasant bay to the south and east for 25 miles on the route to Eastern Harbor. They were undoubtedly being dispersed through the water by the tidal and wind currents, and also being carried to the eastward by the general set of the currents toward Cape North. The enormous numbers of these fry may be imagined from the fact that a 20 minute tow with our fine meshed plankton net gave over one hundred of them even at a distance of 17 miles from the Magdalen islands. In July, a month later, they had largely disappeared as far as our researches showed, for we obtained them only in Pleasant bay at slight depths, and they were twice as large as in June. Probably by that time they had collected into schools, and would be missed unless one happened to strike a school. In the fall the fry of the fall spawning herring were found both on the Cape Breton shore and at the Magdalen islands. They were not very abundant except locally, and were no longer near shore, but only at some considerable depth, about 15 fathoms, the reason being that the surface water was at that time too warm for them. Mr. Cowie has already reported that fall spawning herring occur in the Gulf, basing his view on the herring, which he obtained in summer in his net experiments, and some of which were nearly ripe for spawning. We are glad to be able to confirm this so definitely. The time of spawning was about the end of August on the Cape Breton shore and about the middle of the same month at the Magdalen islands. These fall spawners could undoubtedly be caught at this time by setting nets at the right depth, which depends upon the temperature, about 48° F., apparently being that preferred by these fish.

The regular collection of material by the various kinds of gear employed gave us large quantities of all sorts of animals from different depths and levels, and enabled us to determine just where they were to be found. Since we took temperatures and collected samples of the water at various depths and at various

points from Cape Breton to the Magdalen islands we were able to ascertain just how the distribution of an animal depends upon the physical conditions. The warm water that collects at the surface during the summer is entirely unsuitable for the cod and plaice, but agrees perfectly with the lobster and mackerel. The haddock and the herring, on the other hand, dislike both the very warm water near the surface and the very cold water in the depths and are to be found principally in between these, where they find conditions that suit them. We have shown in the figure where are to be found some of the more important fishes and their young during the summer.

The cod were spawning during May and June, large numbers of their eggs being found floating at the surface. Their fry occurred during June and July. The plaice were spawning with the cod, and their eggs were found floating at the same time. Their fry were very abundant and as summer wore on went deeper and deeper into the water until they reached the coldest layers near the bottom. The sole spawned during June, July and August and its floating eggs were very abundant at the surface or a little below, while the young fry kept to slight depths where the water was of intermediate temperature. The mackerel spawned contemporaneously with the sole. Their eggs and fry of all stages remained near the surface in the very warm water. Eggs and fry that appear to belong to the hake were also abundant during the summer, but no one has yet determined exactly how the eggs and fry of the hake may be distinguished, therefore we cannot be certain of this identification. With the cod in the spring were small quantities of the eggs and fry of the haddock.

To show how complex is the life history of these fishes, we may instance the mackerel, sole and plaice. They all have floating eggs, which are to a considerable extent found together near the surface of the water, the plaice spawning on the whole earlier than the others. As the surface water gets warmer during the summer the eggs of the sole and plaice sink to the colder water below, but those of the mackerel remain near the surface. The fry of the plaice, as has been already described, go deeper and deeper into the water as they grow older, and finally are living in the ice-cold water that covers the bottom where the old plaice live. The fry of the sole, on the contrary, although leaving the warm surface water, do not enter the ice-cold water until after they have changed into the adult condition and gone to the bottom, but remain in the water of intermediate temperature at slight depths. The mackerel passes through all its stages from egg to adult in the warm surface water.

We were interested in knowing the extent to which capelin are to be found in these waters. Apparently they are very rare, but do occur at times all along the coast, although never in large enough quantities to be of any importance. We found them only at Eastern Harbor, seeing a spawning female on June 4, and in July getting the fry both in the harbor and outside, but never in very large numbers, and none at the Magdalen islands. Why should they be so abundant on the Gaspe coast and so rare elsewhere in the southern part of the gulf? This question remains to be answered.

Bait.

Lack of bait is a perennial source of complaint by the fishermen. They are traditionally dependent for

bait upon herring and squid, which occur at times in such large numbers and are so easily handled. When these fail, the fishery stops for lack either of knowledge or of enterprise in seeking new sources of bait supply. At Eastern Harbor salted clams brought from outside points are used to some extent and a very few fresh clams are dug locally, but the supply is extremely limited. There is, however, a moderate abundance of the dark edible mussel (*Mytilus edulis*), the bait that is in such favor in Europe, and that is used to some extent on the outer coast of Nova Scotia. These have the advantage of being more easily gathered than clams, for one only needs to pick them up at low tide or rake them off the bottom. They occur in the harbor and other estuaries from low tide mark to a depth of a fathom or so at least. When the dogfish or grayfish arrive, the mussels are of particular value when fishing for cod and haddock, since the grayfish do not take this bait. A trawl set off Eastern Harbor on September 4, and baited with mussels, gave a big run of cod and not a single grayfish, although, as Mr. Calder reports, the grayfish were all around in the water as the trawl was being lifted. Trawls set near the Magdalen islands, baited with salt herring, took grayfish to the exclusion of almost all other fish.

Another possibility for bait is the rough mussel, which is to be found in tolerable quantities half buried in the mud in the brackish water at the mouths of rivers, like the Plateau river at Cheticamp.

At the Magdalen islands clams are dug for bait, but are not very abundant. There are, however, large quantities of the **round whelk** (*Lunatia heros*) or "cockle," as it is called in the Bay of Fundy, where it is much sought after and sold at a high price to the bank fishermen. We obtained large numbers at the Magdalen islands on the sandy bottom that prevails there in depths of from 5 to 15 fathoms. It would be a simple matter to collect them with a suitable drag or rake and keep them in crates till needed. They are to be found at Eastern Harbor also, but for lack of extensive areas of the right kind of bottom at suitable depths, they are not numerous enough to be of any importance.

Fisheries of Eastern Harbor.

The fisheries of Eastern Harbor are carried on almost exclusively by farmer-fishermen, which considerably limits their extent. Up-to-date equipment for fishing is largely lacking, but the curing of the fish is very efficiently done. In the case of certain fisheries further expansion is probably not advisable, as, for example, those of the salmon and lobster which are carried on along shore. The former are shipped in the fresh state and the latter are canned. The present high prices have led to the fishing for these being very thorough. It is regrettable that the lobster canneries operate for such a very short period, since the canning of other fish, as, for example, grayfish or mackerel, might enable the factories to operate most of the season and would both lower the cost of operation and improve the type of factory. Grayfish have already been canned at Eastern Harbor experimentally.

The herring and mackerel are only partly exploited, but owing to their somewhat uncertain movements the fishermen must be constantly on the qui vive to make the most of them. It is different with the cod fishery, for an immense area well stocked with cod is within easy reach, and only a small part of it is exploited and that for only a portion of the time. Haddock and hake are

taken, but only to a limited extent, because of the very limited area where suitable water and bottom occur. A few pollock are taken, but this part of the coast marks the extreme northerly limit of their range as a fishery. Very rarely are pollock seen any farther in the gulf, although they have been known to go as far as Gaspé. The sword fishery ends at Cape North and does not reach Eastern Harbor. Halibut are only occasionally taken.

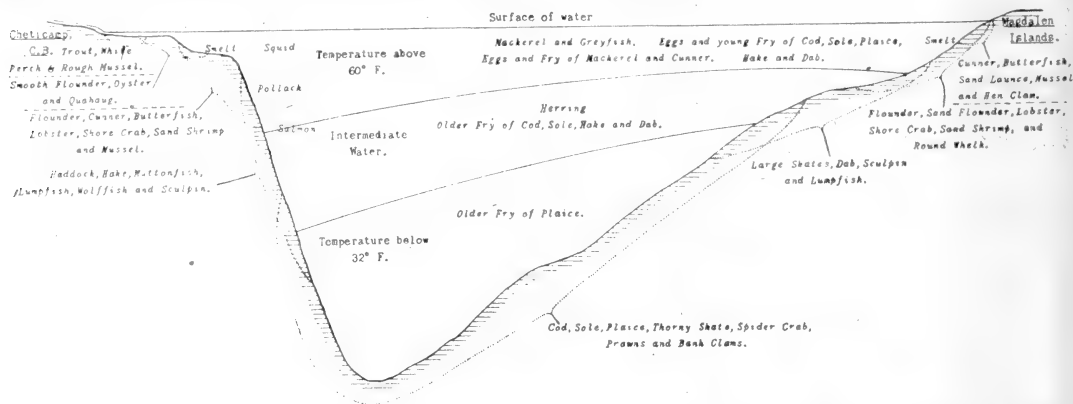
We were particularly concerned with the possibility of developing new fishery resources, and found many fishes entirely neglected. Smelt occur in fair quantities but have not been caught. Flounders are abundant along shore but only small ones can be got in shallow water during the summer, as the larger ones retreat to the deep water and cannot be easily caught until they come near shore during the cool weather. Perch or cunners, locally called *tanche*, are very numerous everywhere in shallow protected water. Though small, they are of very good flavor and have long been eaten in the New England States. There are also in the shore waters large numbers of the shore crab, the sand shrimp and the periwinkle, as well as mussels. Oysters and quahangs, which are to be found in the harbor, are few, because the bottom suitable for them is of very limited extent, but if properly handled the oysters would well repay the attention of one man.

Alwives are rare along this part of the coast and of no value. Tomcod also are rarely seen. In the outer waters at slight depths there are few fishes of any value, but rather large numbers of lumpsuckers are taken in the salmon traps in the spring and should be

made use of. On the trawls a fair number of muttonfish or rock eels are taken and also an occasional catfish. Both of these should be used as food instead of being thrown away as is done now. Skates are few and of small size at Eastern Harbor, but many large ones are to be found at the Magdalen islands, and the recent development of a demand for skate-wings makes it certain that a fishery for them would be profitable, if they could be conveyed quickly to market from that point.

In the deep cold water that covers most of the bottom off Eastern Harbor there are only a few kinds of valuable fishes. The only one at present in use is the cod, of which we have already spoken. The plaice is very abundant and of large size, and is taken on the cod lines but not brought in. Large quantities of sole also occur in this cold water, but they have never been reported as occurring in the gulf of St. Lawrence, for having such small mouths, they do not take the hook and are not known to the fishermen. They can be captured only by the net trawls.

The large spider crab is also an inhabitant of the deep cold water and should become a highly prized delicacy, as it weighs as much as two pounds and the long legs contain a large quantity of delicate white meat that can be very easily removed. All who ate it pronounced it superior in flavor to lobster. It may be taken very readily in baited traps, and if net trawls were used a fair number of these crabs would be taken as a by-product. There are also in the cold water several varieties of large shrimps that might well be fished by using shrimp trawls.



Section of Water between Cheticamp, C.B., and the Magdalen Islands, showing the distribution of some of the animals in summer.

BILLINGSGATE.

London, April 6th, 1918.

The week following Good Friday usually witnesses a visible slackening in the demand for fish in the United Kingdom, but this week has not shown any perceptible falling off in trade—in fact, there has not been nearly sufficient fish to satisfy all requirements, that is, at the prices now in force at the behest of the Food Controller. Under ordinary circumstances, the merchant of course regulates his purchases according to his pocket; in other words, the dearer

the fish becomes, the number of individual firms desiring to secure a share decreases. Now all this is changed; with a fixed price above which fish must not be bought from the producer—usually a steam trawling or drifting company—and a scheduled rate above which it may not be offered to the fishmonger, who in his turn finds the value he may place on the fish when offering it to the public also controlled, every one in the trade is anxious to secure a share. This being so, and with the landings much below the pre-war level it is easy to see that someone must go short. The result has been a perfect scramble to obtain sup-

plies. Various methods have been employed to overcome the difficulty, such as tossing a coin, drawing lots, etc., but the most satisfactory way appears for each buyer to be limited to a certain quantity, according to the supply available. Thus, in view of the state of affairs detailed above, it is impossible to furnish a market report in the ordinary sense of that term.

There has been some relief this week by the arrival at Grimsby, Hull and Fleetwood, of pretty good supplies of fish from Icelandic waters, and where there has been a comparative abundance of any particular kind, cod and chat haddocks, for instance, prices have ruled below the maximum. From this it is obvious that the simplest solution of the present jumble, for jumble or tangle it is for distributors of fish desiring to do their best in the interests of all concerned, would be for the authorities to release for fishing purposes as many more boats as is compatible with national interests.

Needless to say, the difficulty in obtaining adequate supplies of fresh fish has given an added zest to the inquiry of Canadian frozen fish, the list of which has been extended this week by the marketing at Billingsgate of frozen herrings. Mr. S. J. Williams, of the firm of Peter Forge, the principal distributing agent of Canadian frozen fish on behalf of the Ministry of Food, is of opinion that next to salmon and halibut; these frozen herrings are quite the best frozen fish he has handled, and with an almost entire absence of herrings from British ports, these foreign herrings have come in doubly welcome, and have filled a gap wonderfully well. They are a much larger fish than the herrings usually caught off our own coasts—larger even than Norwegian herrings—averaging nearly a pound each in weight. There should be a ready outlet for these fish when native herrings are unobtainable, but when Scotch, Irish and English herrings are procurable in abundance, as they often are, it will not be possible to place frozen herrings at the maximum rate permissible for this kind of fish, viz., 7s 6d per stone. Still, it should only be necessary to market them judiciously, when freshly landed herrings are scarce, and they should then prove most acceptable, provided they are marketed here in best condition. Incidentally, they make fine kippers, and altogether have proved eminently satisfactory.

There is still a marked scarcity of frozen salmon and halibut, both of which are much wanted.

London, April 13th, 1918.

Trading conditions have shown very little change this week, supplies being much short of requirements, with the result that the full maximum prices permissible under the Fish (Prices) Order have ruled more or less generally. An arrival of deep-sea fish at Iceland on Monday was particularly welcome, but with the great demand for fish of any kind it was not sufficient to make any appreciable decrease in rates. On one or two days, salesmen in the inland markets have found it a matter of difficulty to maintain the full rates for plaice, fishmongers appearing disinclined to purchase in quantity.

One great weakness of the new Government order is that it allows for no differentiation between the different sections and sizes of any particular variety—in fact, it is difficult to see how any hard and fast rule as to prices can be laid down in this direction—and the result is that all kinds of any particular kind of fish, irrespective of their condition, so long as they are not

unsaleable command the maximum figures. As it has been necessary to devise various methods apportioning the catches of fishing vessels among the different buyers, this practical fixation of rates acts very harshly in some instances; a merchant for example may find that by drawing lots he is allotted the "tail-ends" of a shot—fish very inferior to his neighbour who may be lucky enough to obtain the most recently caught part of the shot. Still, no doubt these matters will level themselves upon balance. It is certainly to the credit of the fishing industry of the United Kingdom that on the whole, all sections are endeavouring to carry out loyally the recent enactments which the Food Controller has deemed it necessary to promulgate in this time of national stress.

The Canadian frozen herrings mentioned in my last report have been in great request throughout this week, when there has been an almost entire absence of other herrings—in fact, except on Wednesday, when some Norwegian herrings arrived from an East of Scotland port, Billingsgate has been dependent on the frozen variety. So insistent has been the inquiry, that stocks in London were exhausted to-day, and the Government Agent was unable to fulfill several orders.

I am sorry to say that the stencilled weights of these cases of frozen herrings are quite unreliable; this leads to much unnecessary friction and correspondence. I cannot too strongly insist on the necessity of reliable weights and careful grading if this trade in frozen fish is to be placed on a firm basis. It is pleasing to report that so far as is known these herrings have been of excellent quality all through. The other varieties marketed by the Ministry of Food—cod, fresh haddocks, flatfish, schnapper, and skate wings—are selling steadily, but in some instances the quality leaves much to be desired.

London, April 20th, 1918.

This week's markets have been very meagerly supplied with all kinds of trawled fish, and there has been almost an entire absence of herrings and mackerel. As an indication of the limited landings of whitefish, it may be mentioned that no vessels reached Hull on either Tuesday or Wednesday, to cite a leading trawling port, while at Scarborough, one of the smaller fishing ports, the week has been blank owing to unfavourable weather. Under these circumstances control prices have been the rule generally, and the main efforts of merchants and salesmen have been directed to apportioning the available supplies evenly among their various customers. Needless to say, none of the retailers have secured as much as they could have handled.

Canadian frozen fish has sold more or less freely throughout the week, but unfortunately the quality in many instances has left much to be desired, while the weights, especially of the herrings, are quite unreliable. Inasmuch as the quality of fish in the same package varies considerably it is pretty evident that sufficient care has not been given to the condition of the fish before freezing. If this business is to be consolidated on a sound basis the condition of the fish must be like Caesar's wife, i.e., above suspicion, and the weights must be reliable.

London, April 27th, 1918.

Supplies, although still much less than could easily be sold, have shown a welcome expansion this week. There have been two main causes for this; first and

foremost, has been the arrival of a convoy from deep-sea grounds, the vessels landing at Grimsby, Hull and Fleetwood, and secondly, more settled weather has brought landings to some of the smaller stations where last week supplies were practically blank. The deep-sea catches consisted mostly of cod, haddocks and plaice—three kinds very popular in the country—which were landed mostly in excellent condition. Still, demand is so insistent that prices have had little opportunity of falling below the maximum rates allowed under the Fish (Prices) Order, and although varying methods have been adopted at different ports to ensure, as far as is possible, an equitable distribution among the various sections of the trade no one has received as much as could be distributed. Another factor which has tended to keep prices at a firm level is the weather; this has been exceptionally cold for the time of year, and has thus been excellent for preserving such a perishable commodity as fresh fish (as distinct from frozen) in first rate condition. Of course, with sultry weather, it needs only a little hesitation on the part of the public in purchasing to at once weaken prices—merchants and fishmongers are compelled to “give way” so far as prices are concerned, rather than have fish left on their hands; in fact, as the fish trade is transacted in this country, the law of supply and demand operates to the full, so much so that the opinion is largely held that if the authorities can safely make arrangements to increase the supply, there will be little need to fix minimum rates.

It is to be regretted that the Canadian frozen fish marketed by the Ministry of Food is in many instances turning out unreliable, so far as condition is concerned. It is rather difficult at the moment to say where the fault exactly lies, but should it be that sufficient care has not been exercised in selecting only the freshest possible fish for freezing—and there are many indications that this is the case—our Canadian friends cannot be too strongly warned that they are jeopardizing the whole future of a trade which has immense possibilities. The best of the fish is really excellent, but mixed qualities are found in the same case. Not only is the quality unreliable, but sufficient attention is not paid to correct stencilling, while the weights, too, are often on the light side. Canadian exporters should take a leaf out of the book of the Russian, American and Chinese poultry exporters, who by careful selection and grading, guaranteed weights, and uniform packages of a handy size, have built up a big business and a good reputation. “Verb sap.”

London, May 4th, 1918.

Although the aggregate quantities available on one or two days, this week have shown an appreciable expansion, this has been due more to a preponderance of one or two kinds—and these not the most saleable—rather than to any increase in the supplies of all kinds. For instance, plaice and haddocks have been most prominent in the catches from home waters, and although both of these kinds sell freely, their comparative abundance has not compensated for the scarcity of prime fish—soles, turbot and brill—halibut, witches, lemon soles, and other kinds always in great request. Then again, the arrivals at Billingsgate and the other leading distributing markets have included a large proportion of deep-sea cod and haddocks. The feature of the landings at West Coast ports, has been a welcome quantity of hake; this fish, which is exceedingly popular in the United Kingdom, is different to

the so-called Canadian “hake” recently placed on our markets which turned out such an unfortunate venture. Best qualities of most kinds have easily cleared at the maximum rates now permissible, but on several days, small fish, and secondary qualities have rather hung fire.

A feature of consignments has been mackerel from Irish waters. Usually an important mackerel fishing takes place in waters off the Cornish coast each Spring but this year, for reasons which can be readily understood, the Admiralty has been unable to give its sanction to this area being worked by the mackerel drifters. Consequently, the Irish mackerel has proved very welcome. At present, scarcely any herrings are being landed from home waters, and apart from an occasional cargo of herrings from Norway—and these fish are now somewhat “mazy”—the market has been dependent on Canadian frozen herrings. These latter, however, have not gone out so freely during the past week. It is much to be regretted that some of the Canadian frozen fish—chiefly the skate wings—has turned out to be very inferior, and statements concerning it have appeared in the daily newspapers, thus fanning the prejudice exhibited by many people to refrigerated food. The vital importance of ensuring that only fish in absolutely prime condition are frozen for export to this country cannot be too strongly insisted upon.

It appears practically impossible to secure refrigerated space on vessels crossing from Canada to this country for frozen salmon and halibut, but it is understood that arrangements have been made with some of the passenger liners plying to and from the United Kingdom to accommodate any food for which space can be found in the refrigerators usually devoted to the carriage of ship's stores. As the number of passengers on most boats is now the minimum, it might be possible to obtain transport now and then for a few cases in this way; at any rate, it is worth trying. There is a great call here for both salmon and halibut from Canada, and the maximum prices permissible under the Fish (Prices) Order have been fixed at an attractive level.

London, May 11th, 1918.

During the past week, the total quantity of fish available for distribution has been a fairly generous one, but there has been a marked difference in the numbers of different varieties, the bulk of the supplies consisting of haddocks, plaice, cod, whittings, and the commoner kinds, such as coalfish, catfish, monkfish, roker, dogfish, etc., there being a marked scarcity of the choicer selections, such as soles, turbot, brill, halibut, etc. This, no doubt, may be attributed to the limited areas available for trawling, the grounds being strictly limited according to Admiralty instructions. Much of this week's landings has comprised fish from the Icelandic grounds, trawlers from that area arriving at Grimsby, Hull and Fleetwood. Unfortunately, much of this fish has not been in the best of condition, but, with the huge demand now existing for fish of all kinds, prices have usually been at the maximum figures allowed by the Fish (Prices) Order. It is seldom that the catches of the fishing boats are put up to auction now-a-days, the main task of salesmen being to evenly allocate the fish among the clamouring buyers, there always being more merchants will to give schedule rates than there is fish to satisfy all requirements.

There has been a distinct slackening in the demand for Canadian frozen fish, the confidence of retailers having been shaken by the unreliable quality of some

packages, while the fact that the weight of fish in the cases is often below that given as the nett quantity does not assist the trade; especially is this the case with frozen herrings, and although scarcely any other herrings have been obtainable this week, very few fishmongers have evinced any interest in the frozen variety.

At a meeting of the Cold Storage & Ice Association in London this week, some interesting remarks concerning refrigeration and the fish trade were made in the course of a paper read by Mr. Joseph Raymond, the Secretary of the Association. After dealing with various foodstuffs to which refrigeration had been applied more or less successfully, Mr. Raymond said that another food industry which owing to the war has fallen suddenly into the lap of refrigeration is that of frozen fish import. "The stern necessities of war-time," said Mr. Raymond, "have forced large numbers of our population both military and civilian, to skip over those lingering prejudices to which they in the early days of refrigeration so long adhered with regard to frozen meat. I do not by any means wish to be understood as of the opinion that the problems of fish refrigeration have yet been solved, or that on its present basis the frozen fish industry is assured of a successful future in this country. Battle of science, method and marketing have yet to be fought and won before the English consumer under ordinary conditions may be ready to give honour to refrigerated fish among his usually full and varied dietary, but war necessities are at any rate proving to him that refrigeration is opening new and distant resources of Imperial food supply and a rich sea harvest which may in the years that follow spell health and wealth to those who reap and consume it. . . . Canada and Newfoundland have made a promising start in the supplies of frozen halibut, haddocks, salmon, and other fish with which our Dominions and home troops in this country have been so acceptably rationed, to the extent, I believe, of two million pounds weight a week at certain periods. Last year the total imports of frozen fish into the United Kingdom amounted to 8,000 tons. The Government has made big purchases for civilian consumption which are disposed of daily in our big markets, principally Billingsgate, where a Government fish auctioneer makes sales of cod, haddocks, skate, schnapper, cusk, flatfish and herrings, at such figures as five guineas per case of about 200 lbs. for herrings, £6 10s for a similar package of cod and other kinds except flatfish, which are marketed at £1 10s per case." In conclusion, Mr. Raymond added that at the back of all this commercial progress we have practical scientists in the industry working for improvement in the methods applied. Brine freezing of fish has yet to be given its fullest trial, and whatever is the outcome we may assume, he thought, or the experience of former success in other directions that the successful adaptation of mechanical refrigeration to the fish trade will be achieved. With that goal in sight he submitted that here lies another prospect before the cold storage industry, supplying a great asset for the future, and a new source of custom, the fringe of which we are even now touching.

According to statements in the daily papers, surprise has been expressed in the Canadian Press at the price at which Canadian "hake" has been marketed in this country. As a matter of fact, this fish, which is most certainly **not** the hake as known in the United Kingdom—in fact, practical men of the trade in this

country have been unable to identify it—is quite unsaleable as an article of diet for human beings, and the opinion has been expressed that whoever was responsible for sending it over here for human consumption could certainly not have had any practical knowledge of fish as food. It would be interesting to know whether the British Government Department responsible for purchasing this fish or the company packing and exporting it is to bear the loss. Whatever kind of fish Canadians wish to market in Great Britain, do not let them send any more of the—"what is it!"

THE MANITOBA BRANCH OF THE CANADIAN FISHERIES ASSOCIATION.

The first meeting of the Manitoba Branch of the Canadian Fisheries Association was held in the Royal Alexandra Hotel, Winnipeg, on May 17th.

Mr. J. W. Simpson, of Selkirk, presided and Mr. W. Douglas, of Winnipeg, acted as Secretary. The following members were present:—A. M. Freeman, Steep Rock; John J. Wilson, Steep Rock; R. Smith, Oak Point; J. J. Barker, Winnipeg; W. J. Guest, Winnipeg; P. Lavalle, Jr., St. Laurent; G. F. Combat, St. Laurent; B. B. Johnsson, Gimli; G. F. Johnsson, Selkirk; Angus McIntyre, Selkirk; J. Sigurdsson, Gimli; G. G. Shears, Winnepigosis; K. McAulay, Winnepigosis; J. C. Adam, Winnepigosis; Isaac Bradbury, Winnepigosis; J. F. O'Callaghan, Portage la Prairie; G. E. Solmundson, Gimli; B. Markovitch, Delta; J. A. Helgason, Selkirk; H. Hanson, Selkirk; G. B. Magnusson, Selkirk; T. J. Jones, Winnipeg; J. Halldorson, Lundar; M. Stephenson, Selkirk; W. H. Climie, Winnipeg; W. Douglas, Winnipeg; S. Kristjansson, Gimli; Colin J. Murray, Selkirk.

The Acting Secretary read the minutes of the meeting held April 8th. These were confirmed.

For the benefit of those who had not been present at the April meeting, the Secretary outlined the objects of the Canadian Fisheries Association. He explained that the organization represented every element in the industry whether they were producer, curer or distributor. He urged the fishermen and dealers present to go back home and make every endeavor to interest a large body of the fishermen in the Association and to secure the membership of every available man connected with the industry. The Secretary further outlined what the Association had already accomplished for the industry.

The following officers for the current year were elected: Chairman, J. W. Simpson, Selkirk; Vice-Chairman, J. Sigurdsson, Gimli; Secretary-Treasurer, W. Douglas, Winnipeg.

Other members of the Executive were appointed as follows:—

Representing Lake Winnipeg District:—A. McIntyre, Selkirk; M. Stephenson, Selkirk; S. Kristjansson, Gimli.

Representing Lake Manitoba:—J. J. Wilson, Steep Rock; A. M. Freeman, Steep Rock; B. J. Mathews, Siglunes.

Representing Lake Winnepigosis:—F. G. Shears, Winnepigosis; C. Denby, Winnepigosis; J. C. Adam, Winnepigosis.

Representing The Pas District:—As no representatives of the dealers or the fishermen were present, it was decided to leave the appointment of committee for this district to the local men at that point. On

each committee, the Association have elected one dealer and two fishermen to take up local matters at the respective points.

After the committees were struck, Mr. A. E. Philip of the Western office of the Canada Food Board addressed the meeting, outlining the suggested regulations for fresh fish during the summer and the fall seasons. He expressed his appreciation at the formation of the Branch and believed it would be helpful to the work of the Board—as they could communicate with a central organization representing the industry.

Capt. F. W. Wallace, of Ottawa, congratulated the Branch at the interest displayed by having such a fine meeting. The Food Board held the first consideration to be an adequate supply of fish for the Canadian trade, and secondly that the retail price to the consumer must not exceed 16c per pound in the three Western Provinces.

It was unanimously resolved on motion of Mr. Murray, seconded by G. E. Solmundson that this Branch endorse the regulations outlined by Mr. Philip and spoken to by Mr. Wallace.

General matters relative to winter fish, the mis-marking of boxes, wrong packing and short weights were discussed generally. The details of suggested regulations were left over until a meeting which will be called later in the season and before the men leave for their winter fishing stations. General satisfaction was expressed at certain conditions which prevailed during the winter season just passed and it was the expression of the various speakers that these complaints could be remedied before another season came round.

FISH FOR FOOD HAS COME TO STAY IN CANADA.

Canada is now on a Fish Diet. Canada will always continue to be on a Fish Diet.

Never again, as in pre-war days, will meat hold sovereign place on Canadian tables. Herds of live stock around the world have been depleted by the necessities of war. In Europe alone the available supply for 1918 is 115,000,000 head less of cattle, sheep and hogs, than it was in 1914. High prices and imperative demand from the fighting forces have cut into the feed animal stocks of the world to such an extent that they will never recover their pristine place. To-day the demand is greater than the supply, and that condition is likely to persist after the war with consequent high prices. It is inevitable that fish for food as a substitute for beef, pork and lamb, has arrived in Canada, and has come to make us a long visit.

Are the providers of food for Canadian households seized with this important economic fact? Do the meat-dealers, the fish-dealers, the grocers, the department stores, realize that fish for food is here to stay?

They are faced with both a condition and a fact; are they duly impressed with the situation and are they organizing themselves and readjusting their business and their methods to cope with the change in the food-habits of the people of Canada, forced upon them by the exigencies of war and the increasingly high prices for the flesh of food animals? If they are understandingly aware of this tendency, are taking measures to meet the growing demand of fish for food, they are wise in their day and generation. But if they are not responding to the tremendous economic revolution going on in the households of Canada, they

are foolish virgins, and have not trimmed their lamps and got ready.

Preparedness on the part of the fish-dealer for the constant demand of fish for food from Canadian households is his salvation if he desires to keep in business and render service to the public. If he is neglectful of his opportunity, now knocking so loud at his office door, he will encourage rivals with keener business perception to spring up, who capitalizing the new demand, will outstrip him in his own chosen line of business. The public must be served. Canadians must eat fish for food. The dealer who caters to that new need in the most efficient manner deserves the patronage of the public.

Hitherto, fish has been considered as a side-line in business for the most part in Canada, outside of the larger cities, and even in those, service to the public has been perfunctory and half-hearted, as if it were not worth while. A convenient, neat, unbreakable package is an elemental necessity in a fish store, if the householder is to be given service. There is no reason in the world why a pound of fish should be as readily purchased and pocketed as a lb. of bacon. But it isn't, and it never has been in Canada. Your business man on leaving home in the morning is told to fetch back a pound of bacon; and he does, if he doesn't forget. In these days, he would like to fetch back a pound of fish in his pocket, just as he would a pound of bacon, but where is the man so courageous as to pocket a pound of fish as put up by the ordinary dealer, without careful wrapping? A pound of fish in his pocket, in the package usually supplied by the fish-dealer, will ruin a perfectly good forty dollar suit of clothes. Is it worth it? It would appear that the men who provide food for the householders of Canada have in times past been in a benevolent conspiracy to prevent people from eating fish for food and to insist that they eat beef, pork and mutton. If care in packing is any criterion, the case is proved to an absolute demonstration.

Similarly, the hotels and the restaurants in Canada have thwarted the natural predilection of the people of fish for food, through their indifferent cooking. The essential qualification of the ordinary cook is that he be able to cook eggs and meat. Cooking fish is an entirely different affair, yet the majority of cooks manhandle it as they do a beef steak. Cooking is everything with fish. It is not hard to learn how to cook fish, but, by hickory, you have got to learn if you are going to know how. In the days of plenty, when money came and went easily and life was young and voracious, intolerable cooking was overlooked amid the array of fine linen and silverware, and dainty service. The cooking amid its enticing camouflage was even praised, but believe me, it was intolerable, so far as the fish was concerned. Has it improved? Are the public-eating house managers alive to the need of improving the culinary practices of their chefs? The first question that should be asked of a cook is: Can you cook fish? If he can, the eating-house that engages him will not want for patrons.

What has been said, in part may be applied to the average Canadian household, whose managing head in the great majority of cases either can't cook fish or does not care to bother. Now, at the risk of becoming a target for pots and pans, I suggest to the women of Canada that they learn how to cook fish. They should know anyway, but with all Canada on a fish for food diet, it becomes more than ever a duty.

Proper cooking of fish will encourage a more general substitution of fish for beef and pork and thus release more of these vitally essential war foods for shipment to the allies. Besides that in consuming fish Canadians are partaking of a National product in whose trade development all Canada stands to gain. The patriotic household cooks fish properly and eats it frequently.

It is the fish dealers who are the organizers of the fish for food habit of the people of Canada. They perform an important function and service between the source of supply and the consumer. Fish dealers are responsible for keeping Canadians on a diet of fish and it is their duty to see that it is well done. If they do not do their duty in getting fish in fit state to the consumers they are blamable. If they provide themselves with sufficient quantities and varieties of fish, exhibit them on proper tables, topped with marble or tile, disperse chunks of clean ice among their stocks, and put their sales up in sanitary, unbreakable and handy packages, they are worthy of all praise, and are doing notable national service in these war times.

But the fish dealer needs to go further if he is to hold and increase his sales. Not only must he make his fish store spick and span and run it on the most modern methods, but also he must keep informed as to fish and fish facts. The retail selling of fish is only in its infancy in Canada. It will stand a great deal of improved development. Within twenty-five years the sale of pork and dairy products have been revolutionized by the big packing houses in Canada. Who will say that the big wholesale fish houses will not do a similar thing with fish before many years are gone?

What has been done in retailing fish in the United States? How did Great Britain build up her enormous fish trade? Did you ever hear how baskets of fish, fresh caught, are shipped out of Grimsby, England, every morning to individual householders hundreds of miles away? Fish and chip shops are numerous in the coast cities of the North American continent. There are many splendid fish restaurants in the cities of the United Kingdom, but in the United States and Canada, where store-keeping and public eating house genius has reached a high mark, and where the finest fish in the world are to be had, there is no first-rate exclusively fish restaurant, managed by a man like Bloomer and presided over by a chef like Oscar, both of New York. Yet such an eating house supplying fish would pay in Toronto or Montreal.

The fish dealer must keep in touch with events. He should be a subscriber to and a reader of the Canadian Fisherman, that is doing meritorious work on behalf of technical education in fish culture, as well as providing an excellent compendium of news and views of the fishing industry from the Atlantic to the Pacific. He should know the fish he sells from its habitat in sea or lake or stream to its last look as it leaves his store. He should think in terms of fish, and he should be proud of his association with a business that is feeding the people of Canada with a food that judged by every standard is wholesome, nutritious and healthful. He has reason to be proud, for he is a co-partner with the consumers of Canada in utilizing a hitherto little exploited source of food supply—practically a virgin source of food supply—within the confines of the Dominion, and thus adding to the food stocks of all countries fighting against the savagery of Germany. Food will win this war. Eating more fish in

Canada will vitally assist in that consumption.

My word to the fish dealers of Canada is to magnify their calling. If you do not now take pride in it either get out of it, or make the business such a one as you can take pride in. You have a splendid opportunity to do successful service to the consumers of Canada and make a profit. For, believe me, fish for food is here to stay.

AN APPRECIATION.

COLONEL THE HON. C. C. BALLANTYNE, M.P.
Minister of Marine and Fisheries, and of the Naval Service.

By WILLIAM HAMMAR GREENWOOD.

The best Minister of Marine and Fisheries Canada ever had, is the way a prominent Canadian salmon canner describes Colonel the Honorable C. C. Ballantyne, M.P., the present incumbent of the office.

He laid stress upon the fact that the new Minister is a proven business executive, familiar with dealing with large questions in a generous way, and conversant with the fundamental principles of modern business success.

Colonel Ballantyne's rise from office boy to President, and but recently Managing Director of the Sherwin-Williams Paint Company, through sheer force of merit and capacity, is a sufficient testimony to his fitness to administer the important department not only of Fisheries but also of the Naval Service, both marine and protective.

As a member of the Montreal Board of Harbor Commissioners for years, he acquired first hand knowledge of ships and shipbuilding needs, which he is now using on behalf of the people of Canada in launching a national steel ship-building programme.

Hitherto, for generations, the head of the Department for Fisheries in Canada has been a lawyer, with the exception of Hon. Mr. Prefontaine, who was first and last a clever politician and a contractor.

To-day, a business man, trained in the most exacting school in Canada, and acceptable to the captains of industry in large Canadian cities is the **chief fisherman of the Dominion**. His responsible charge will be to encourage and protect the fisheries of Canada. By applying the wisdom he has gained in building up one of the largest industrial concerns in the country, to the Fisheries, he may reasonably be expected to surpass the records of his lawyer predecessors, who could see legal points, but quite overlooked the fish.

He is happy in having in his Department, both in the inside and outside services, some of the most capable officials in the employ of the Government, well informed on all points, and imbued with the spirit of fairness, constantly safe-guarding the public interest against the encroachments of over-zealous private enterprises. G. J. Desbarats, C.M.G., Deputy Minister; W. A. Found, Chief Superintendent of Fisheries; Professor Prince, Chairman of the Biological Board; J. A. Rodd, Superintendent of Hatcheries, and Colonel F. H. Cunningham, Chief Inspector of Fisheries in British Columbia, are the equal of any fishermen in energy and ability in America, and are attached to their work by singularly sincere regard for the equitable development of Canada's vast fisheries resources. It is their life work that the people should benefit by their legiti-

mate exploitation, and that they should make two fish appear where only one appeared before.

The new Minister, who might be expected to possess a new broom, has not made a sweep with it, but has taken over the Department and given the word to "Carry on."

In that very first action on his part, he has won the respect and esteem of his officials, and there is a noticeable speeding up and stiffening of parts that bespeak thorough efficiency and a desire to excel.

Your excellent business executive is a pragmatist. He judges by results. The new Minister is in the conning tower, and is looking on. He is going West in the summer to see salmon canned on the rivers of British Columbia. He will also visit the Atlantic. Before Christmas he will know the business end of his Department as he knows a pint of paint. The man does not live who can fool him on paint. He will be a hard fishman to fool on fish.

Colonel Ballantyne has been described by the inimitable Gadsby as a sort of De Wolf Hopper. He does suggest the elongated comedian but only in height. Hopper is ungainly and tall, and his knees bow to each other. Not so the Colonel.

He is Colonel in more than name. He is a real Colonel by instruction and by merit, for he raised a Montreal regiment and accompanied it overseas. He always took the salute at review and that requires more than a uniform as any soldier can tell you.

His first public utterances in the House of Commons, the most exclusive club in Canada, caught the ears of the members and the comment was general and instant, that he would do.

He has made several unusual statements in Parliament. He has expressed his gratitude that he is an amateur in politics and proposes to remain so. He has also declared that politics and patronage will play no part in the administration of his Department. There are old timers in the House who profess to scoff at these so-called idealistic expressions but Colonel Ballantyne is sincere in what he says, and those who know him best says that public office has no charm for him, except that he may faithfully serve his fellow-countrymen. If he thought he could not run his department on thoroughly business lines, without interference from partizans and wire pullers, he would resign, without delay and he would tell the public why he quit.

He believes a public office is a public trust, and so long as he is a trust for the people of Canada he will give them the best service of which he is capable.

It is evident that the new Minister of Marine and Fisheries is typical of a new force in public life, and one that will receive the cordial endorsement of the taxpayers who are always willing to pay the price if they are satisfied that they are getting value for their money.

With perhaps one or two exceptions, no member of Sir Robert Borden's cabinet is better equipped, physically, mentally, by temperament and by experience in business to give a definite urge to more business like governmental administration than Colonel Ballantyne.

Judging by his public utterances, Canada will watch with interest how well he succeeds in revitalizing his own department, if it should perchance need it, and on that record he may hope to build the foundations of any edifice his ambition for public advancement may conceive.

Whatever regulations have been issued since he took

over the Department have been in keeping with safe, sane and sound common-sense, with no sign of pandering to the spirit of innovation because it make be novel and spectacular.

The necessary thing alone has been done. The closing down of the lobster hatcheries on the Atlantic coast was not a politic move from the standpoint of the partizan, but it was necessary, and, followed an investigation by Professor Knight who declared Lobster hatcheries were worse than useless—they were killing-off the lobsters.

As a business man the Colonel closed down the hatcheries. Had he been merely a politician he would have had his ear to the ground and would have heard the clamor of the political pack over the dying moan of decimating lobsters.

Apparently the new Minister intends to conserve the sea-food fisheries of the Atlantic, even if there is surprise expressed down by the sea.

His persistent co-operation with the Canada Food Board in its campaign for the creation of a market for Pacific flat-fish in the four western provinces is an outstanding indication of his capability of playing the game on the broadest lines. He made it possible for the Canada Food Board to guarantee consumers a price of about ten cents per pound, for these hitherto little used fish, caught by a trawl, by getting the Government to assume two-thirds of the transportation charges from the coast to the inland cities and towns. A smaller man might have claimed that the Department of Fisheries should carry on this campaign, but the Colonel lends cordial support to the Department that long ago organized itself to induce Canada to substitute fish for beef, and pork in order to help win the war.

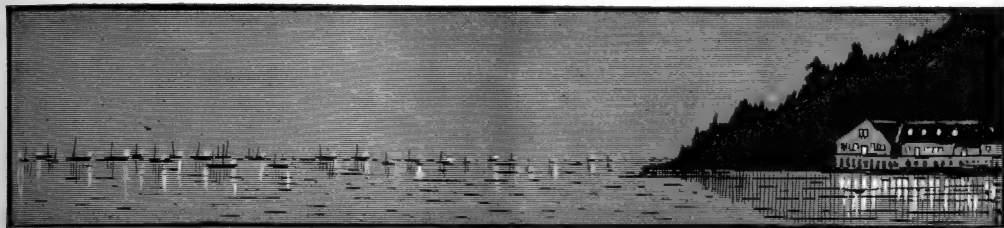
Whatever and whoever encourages a legitimate extension of the fishing industry in Canada finds a friend in the new minister, who is satisfied if Canada's fisheries resources are being utilized for the benefit of the people.

In other days such action as was taken by the Canada Food Board might have jarred the Constitution to its rafters, so jealous of its preserves was the Fisheries Department. But the business man always looks to the results. The Canada Food Board is getting results. That satisfies the Colonel.

Colonel Ballantyne is on the sunny side of fifty, and by reason of his splendid physique looks nearer forty than forty-five. He was born on an Ontario farm of Scotch Presbyterian stock. With the rewards of an exceptionally successful career thick upon him, he reverts in memory to the happiest days of his life when he was a farmer's boy.

He has two hundred acres of land near the town of Winchester, in Eastern Ontario, to which he devotes almost a father's care, and where he delights to spend his week-ends and entertain his friends with an inspiring contemplation of real production of food stuffs. He believes it is the duty of well-to-do city men to spend part of their time and some of their money in developing farms, so that the country may be made acquainted with the city and the city man broadened by coming in contact with the salutary ideals possessed by the countryman.

Altogether the new Minister of Marine and Fisheries is a unique personality, with notable phases of character, that will make him a power in the service of his native land.



PACIFIC COAST SECTION

THE INTERNATIONAL FISHERIES COMMISSION VISITS VANCOUVER.

This article is not to give a record of the doings of the Commission, but to give a little side light on the good feeling that has been created by the sittings of the Commission, both on the Atlantic and Pacific Coasts. The writer attended several of the sittings in Vancouver, and noted with interest the pains that every member took to get at every angle of the questions before them, and they insisted that all those appearing give their own ideas of the question under discussion. They would not accept any questionable answers, and by so doing they had been able to make decisions that will be according to the evidence produced. Another thing that was carried out while the Commission was in Vancouver was a public meeting at which Secretary Redfield, and Judge Hazen were the speakers. This meeting was held under the auspices of the Women's and Men's Canadian Clubs of Vancouver, and the audience was very representative of the thinking men and women of the City. Mrs. Scott, who represented the Woman's Canadian Club and presided, in introducing the speakers, mentioned the fact that from all that she could find out about the Fraser River sockeye she concluded that they did not know the International Boundary line when they saw it. Secretary Redfield did not dwell upon the doings of the Commission, but gave a decidedly strong address on why the United States did not enter the war before they did, and also some interesting details of what obstacles they had to overcome after they did start. The Secretary's address was exceptional in many ways, and those who had the pleasure of being present were amply repaid, as he is a very forceful speaker, and his hearers realize that he is master of the subject he is discussing. The United States could not have a better man in every way on this International Commission than Secretary Redfield. Judge Hazen, in his address, went into details regarding the doings and ob-

jects of the commission, which gave the public a splendid idea of just what the commission was hoping to accomplish, and the different questions they had been taking up. He gave in a decidedly lucid and interesting manner the troubles way back in 1818 when the first fishery treaty was made, and then the one in 1888, and how the fisheries interests on the Atlantic Coast could not seem to get together, and then how this year they held their sittings in Boston and Gloucester, and invited the men in the fish business in St. John, Halifax and other centres to the north of the line to be present in the United States sittings, and they came down, and questions were discussed that never had been discussed before under such conditions. In fact it was the first time that the fishery interests of both sides of the line had ever come together on the other fellow's territory and discussed matters pertaining to their mutual interests in the history of the business. When the sittings were held at St. John, the Commission had the men representing the Boston and Gloucester interests come up, and discuss the questions with their northern neighbors. The result was that misunderstandings, and misrepresentations that had been going on for generations were swept away. The result is to-day that both the Canadian and American fishing craft enter and clear the ports of each country freely, and good feeling exists all round. When they got out to the Pacific Coast they found more or less of a sectional feeling existed, especially in Ketchikan where the business men opposed the idea of allowing American fishing vessels entering and clearing, and delivering their catches at Prince Rupert, but the fishermen were anxious that this be done. The Commission did not believe in allowing any sectional or local feeling to stand in the way of their accomplishing anything that is for the benefit of the general public on both sides of the line. The amount of good the Commission has accomplished is apparent on both the Atlantic and Pacific coasts even now, and it is not yet ended.

THE SITTINGS OF THE INTERNATIONAL FISHERIES COMMISSION ON THE PACIFIC COAST.

The Pacific Coast meetings of the American-Canadian Fishermen's Conference began on April 24th and closed in Seattle on May 10th. They exceeded in impotence and interest any former fishery meetings on the coast. Meetings were held in Seattle, Prince Rupert, Ketchikan, Vancouver, New Westminster, and again in Seattle. The salmon fishery of the Fraser River, Pacific Halibut fisheries and Port Privileges were the three subjects dealt with. The Fraser River fishery occupied most of the sessions in Seattle, Vancouver and New Westminster. At the opening of the Seattle meeting the chairman, Hon. Wm. C. Redfield, outlined the scope of the conference and stated that the questions at issue must be considered from a national and not from a State or Provincial aspect. That they were questions on which all the people of North America were concerned and they would so be dealt with. Selfish and monetary considerations must give place to national interests. That conservation of an important food supply was the prime object together with the removal, for all time he hoped, of every fishery question at issue between two great governments. He dwelt at length, as did Justice Hazen later, with the results already attained on the Atlantic coast, and expressed the hope that their work on the Pacific might be equally successful. The meetings were entirely informal, the chairman having stated that while they desired facts they were also ready to hear the opinions of men who had made a study of the questions, and that interested parties were at liberty to question witnesses so long as they confined attention to the matter at issue.

At the first Seattle meeting the Washington State Fisheries Association, representing the salmon canning industry of that State, presented a transcript of the evidence collected from cannerymen, trap-owners, purse-net fishermen, and scientific students. While admitting that great depletion had taken place in the runs of salmon to Puget Sound and the Fraser River and that additional measures must be taken to insure a greater number of sockeye salmon reaching the spawning grounds of the Fraser, the Association did not believe there was need of absolutely closing the sockeye fishery for a period of years. A closed season from July 20th to August 1st, inclusive for sockeye in Puget Sound waters, and from July 25th to August 5th, inclusive, in British Columbia waters was recommended, on the ground that such a period would insure fifty per cent of the present run reaching the spawning area. The Association also advocated a more restricted use of purse-nets in Puget Sound sockeye fishing. The Purse Seine Fishermen's Association, while favoring a ten days closed period in July, opposed any further restrictions as to the use of purse-seines. They maintained that the runs of sockeye had been depleted because the traps had persistently been operated during the weekly closed time, notwithstanding the regulation. They charges repeated violations. State Fish Commissioner Darwin, and many trap operators, denied the charge. The agent of the Purse Seiners Association expressed the view that the majority of its members would favour an absolute closing of sockeye fishing during one of the lean years, and four years later, in order that the effect of such closing might be determined.

The Fraser Salmon Fishery was the one subject

dealt with at the sessions in Vancouver. A statement of the Hon. Wm. Sloan, Fisheries Commissioner for the Province of British Columbia, was read at the opening. His statement was strong and practical. He advocated an absolute closing of all sockeye fishing for a period of years, saying: "The runs of sockeye to the Fraser are perilously near to extermination. They will be exterminated if conditions remain as they are. In view of the evidence there is, in my judgment, but one thing to do. Adopt measures that will insure to the watershed all the sockeye that still survives. To that end I would suggest the total prohibition of sockeye fishing in waters frequently by those produced in the Fraser until such time as they have recovered from their depleted condition." "This is the greatest fishery question in which Canada and the United States are now concerned," he said. "The only adequate, the only permanent solution of this question is the acquisition by Canada and the United States of all the rights in the fishery of which they may not now be in possession, though it involve the question of compensation to resident fishermen and cannerymen who are in a position to establish grounds for such recognition. That being established, the waters should be closed to sockeye fishing for such a period of time as is necessary to restore the runs to the abundance of former big years. When that has been accomplished, let fishing be resumed under supervision and for the benefits of the two nations, until such time as they have been recouped for their expenditures, and thereafter in such manner, and to the end that the supply may not again become depleted."

The British Columbia Salmon Cannerymen presented an able memorial expressing their views. Notwithstanding the depleted condition of the fishery, they did not approve of absolute closing. By lengthening the weekly closed season and a curtailment of the use of traps and purse-nets in Puget Sound and greater efforts at artificial propagation and the elimination of trout from the Fraser, they maintained that the runs could be restored as they had been in the Columbia. They advocated closing the fishing in the Fraser at New Westminster Bridge. Henry Bell-Irving of the A.B.C. Packing Co., endorsed Commissioner Sloan's statement as "being the most businesslike recommendation yet advanced." The six plants owned by the A.B.C. Packing Company on the Fraser would not again be operated, he said, until the run had been enlarged, because it would not pay to operate. Assistant Commissioner of Fisheries Babcock, advocated an absolute closing, and gave evidence of depletion. Chief Inspector of Dominion Fisheries, Lieut.-Col. Cunningham, advocated a 72-hour weekly closed season, and greater restriction on Puget Sound and on the Fraser. He would, he said, endorse Commissioner Sloan's proposal but for the present food shortage.

At the meetings in New Westminster, the Board of Trade and many fishermen opposed an absolute closing of sockeye fishing, but advocated a longer weekly closed time and greater restriction on Puget Sound. They also urged the extermination of trout and other predacious fishes in the Fraser watershed, and of the grey seal in the Gulf of Georgia.

It is the opinion of cannerymen and others that the Conference was presented with all the pro and con views on the salmon fishery question. Some of those who have followed the evidence closely express the opinion that the Commissioner will favor the adoption of some radical measures as to longer weekly closed

times, and possibly an entire closed season in 1920 and 1924, in order to demonstrate the effect upon the spawning grounds. In view of the evidence of depletion and the scientific evidence submitted by Dr. Gilbert and Mr. Babcock, it is thought they can do little less.

The Halibut Question.

The halibut and port privileges questions were the subjects dealt with at Prince Rupert and Ketchikan. The weight of oral evidence given favoured a December, January and February closed period for halibut fishing, and to be enforced in non-territorial waters by prohibition of landings in Canadian and United States Ports. It was generally admitted that halibut were rapidly being depleted. The evidence on this subject submitted at New Westminster and in Seattle was in line with the evidence secured in the North. Greatly to the surprise of the Seattle representation that accompanied the Commission to the North on the United States Lightship "Cedar," the fishermen at Ketchikan unanimously advocated that United States fishermen should be permitted to enter and clear from Prince Rupert. While several American interests, notably those at Seattle, opposed American vessels being given the right to enter and clear Canadian ports for the fishing grounds and for trans-shipment of cargo the "independent vessel owners" in the north strongly advocated such measures.

The personnel, the Commission, and the open and frank method in which all the public meetings on the coast were conducted, created a most favorable impression. Both in Seattle and in British Columbia, the press gave extended reviews of the evidence submitted. The editorial comments on both sides of the line indicate confidence in the conference and that good—much good—will result from its deliberation.

The conference adjourned in Seattle on the 10th May. The Commissioners and their staff of assistants proceeded east over the Canadian Pacific Railway, and will hold final conference in Ottawa beginning on 20th, at the conclusion of which it is anticipated they will make formal announcements.

BRITISH COLUMBIA SALT HERRING.

Scotch Cure.

The British Columbia Scotch cure salt herring pack during the past season amounted to nearly 25,000 barrels, and in value to approximately \$450,000, that is if the bottom had not fallen out of the British Columbia Scotch cure market. As a matter of fact there are now approximately about one-half of the pack which has not been actually disposed of although a few thousand barrels are held by consignees who have made cash advances. The balance is still unsold. Please bear in mind that these are not official figures, as the official returns are not to be had at the present time, but are very close.

Before we attempt to analyse the situation let us point out the fact that British Columbia's herring supply has not yet been fished to anywhere near its capacity. To be sure the different localities show a different kind of herring, both as to fatness, and size. Up to the present time there have been only four different localities that have been fished with the idea of curing the product by the Scotch method. These localities are Point Grey (these grounds have not been fished for the past two or three years, as the fish seemed to have disappeared), Pender Harbor, Nanaimo

and Port Alberni or Barelly Sound. The Point Grey herring are without doubt the best that have been caught, but for reasons noted this locality will have to be eliminated. The Pender Harbor herring come next both as to fatness, shape and size, but the pack at that point this season was a failure, as there were not over 1,500 barrels packed there all together. Next to Pender Harbor come the Alberni herring, and some contend that the Alberni herring are the equal to Pender Harbor herring. In any event the Alberni pack this season was looked upon as a very good pack, and must have been satisfactory, when they are given the proper care, and put up under the right conditions, as prices have been realized that is a good proof of this fact. One of the best packs brought as high as \$22 per Scotch barrel for part of the pack, and but for the different factors that have entered into the fixing of the conditions that now hold over the B. C. herring market, there is no doubt but what this pack would have averaged at least \$20 per barrel right through. As it is now close to one-third of this pack is held in storage waiting to move at a price the owner hopes to secure for them. On the other hand there have been lots that have sold as low as \$10 per barrel. This gives an idea of the range which prices have taken since the season started. The reasons for it are several, and we will give as near as possible the causes that have led up to these conditions. In the first place an attempt was made to control the entire B.C. pack, and when the Pender Harbor pack was known to be a failure every attempt was made to secure herring to pack under the Scotch cure method. Many packers were advised to secure Nanaimo herring for their packs, and it was no time before stations were built or arranged for by those who had been unsuccessful at Pender Harbor. The result was that thousands of barrels of Nanaimo herring were packed. This to the writer's mind was the worst move that was made, as it immediately resulted in the securing of many tons of an inferior herring for the Scotch pack, as the Nanaimo herring has not been used for anything but bait and an Oriental pack of salt herring for many years past. They have the length, but not the shape and fatness or meat. Then again the different methods used were not conducive to the securing of the right results. Much of the herring was roused in tanks, which held altogether too much herring, and as a result they were too hard salted before going into the pickle. This resulted in many barrels of inferior stock being packed. Another reason was that there were some curers that pretended to know about the Scotch method of curing herring, when as a matter of fact they were nothing more than amateurs. As stated before an attempt was made to control the entire B. C. herring pack, and those that were packing had been told that they could dispose of every herring they put into a barrel at prices ranging from \$16 to \$20 per Scotch barrel, f.o.b. Vancouver for cash. Many barrels of Scotch pack were packed without regard to grading for sizes, and as they had been roused altogether too long before being put into pickle, they simply hardened and shriveled up when more salt was added. The result was that a lot of these herring were shipped out without the proper kind of inspection, and when they reached the New York market, they were refused. Now any one that knows the fish business should be perfectly aware that no one firm can control the products of the sea, and that no one firm in one city

can expect to secure the exclusive output of any one section. When the receiving firm received the shipments of herring that had not been properly inspected before being shipped, they promptly entered a severe complaint, and gave instruction that no more herring be shipped them except those of certain packers, whom they were sure would put up the right stock. Now take into consideration the fact that this firm had paid the top price for the herring in question, and that the trade had found out that there were questionable herring being packed, it may well be imagined that the next thing to be expected would be a desire to see first hand all the herring offered before any more buys would be made. This resulted in representatives of all the large Eastern buyers coming to British Columbia to inspect the herring pack first hand. The outcome was that the buyers who had hoped to secure the entire B. C. pack found himself with a good stock of high priced herring on hand, and with the knowledge that about two-thirds of a pack of 25,000 barrels was still to come onto the market. All the buyers purchased a few hundred barrels while they were on the coast, but the great bulk of the pack was still left, and with no offers. From a hoped for price of \$18 to \$20 per barrel the packers found themselves with their packs on hand, and prices of from \$17.50 down being offered them. One buyer bought some at \$10 per barrel before he left, and since then offers have been received at \$8 and when the packer decided to sell this offer had been withdrawn. The reason for this was that the shortage of cold storage space had now entered into the calculations, and with no space to be had in New York, Boston or Philadelphia the buyers have been absolutely unable to pay, and know that they could take care of their purchases upon arrival in New York. As far as the writer can see this condition as to cold storage space will continue for some time to come for the simple reason that the more troops the United States sends to the front the more supplies they will require, and until the proper amount of transportation space is acquired there must necessarily be a large accumulation of supplies at every loading port. This means that the salt herring unsold must be carried until the supply in the Eastern markets is low enough to warrant cars being shipped for arrival at such times as they may be promptly disposed of to the consuming public, and not be held in storage, in the East. British Columbia fishing interests have regretted that these conditions obtained this past season, as it gave the British Columbia Scotch cure pack a bad start. In the first place it has been felt that the prices talked of at the beginning, namely \$20 per barrel and up, were altogether too high, especially for the grade of herring being packed, and then when this price dropped to a price \$5 to \$10 below the \$20 price, the loss in paper profits looked pretty big. One thing is sure and that is that there is a great necessity for Government inspection, and with this end in view there is a resolution being placed before the Department of Marine and Fisheries to have a compulsory inspection of the Scotch cure pack of herring, and a tax on every barrel of Scotch cured herring put up. By having a practical Scotch curer with a thorough knowledge of the cooperating department of the trade as inspector, British Columbia should not have a repetition of what happened the past season.

British Columbia has the herring, and herring that equal the genuine Scotch herring, both in size, shape

and quality, and with the proper methods used, and proper inspection in force there is no reason at all why we cannot compete with any of the other markets, and the same firms that have gone through the unlooked for experiences of the past season are going to pack this coming season, but with the one idea of getting up herring that there can be no possible question raised as to their quality. They have learned their lesson, and will profit by it. In fact, new firms are going to pack this season that did not pack last season, and this speaks well for those connected with the fishing industry, as it means one thing, and that is that British Columbia will come to the front with their salt and canned herring just as she has with her canned salmon, and the writer predicts that during the next five or ten years the British Columbia herring pack (canned and salted) will out-rival the salmon canning industry.

PISCATORE.

Vancouver, B.C., May 17, 1918.

NEW CANNERY ON QUEEN CHARLOTTE.

Two gentlemen who are well known to the fishing interests of British Columbia, have formed the Lockeport Canning Co., Ltd., and will build a cannery in season for this year's pack. These men are Capt. E. H. Simpson, and Bill Shrubbsall of Prince Rupert. Capt. Simpson is better known in Vancouver, as he has been connected with fishery interests here for many years, and everyone in and around Prince Rupert knows "Bill" Shrubbsall. The new cannery will be operated at Lockeport, Queen Charlotte Islands, and the company will also handle smoked, salt and fresh fish, making their shipments through both Vancouver and Prince Rupert. More will be heard from this firm, as they have been very successful during the past season, and no doubt will continue this success the coming season. Here's all good luck for the new firm.

SERIOUS FIRE AT STEVESTON, B.C., DESTROYS SALMON CANNERIES, AND CANNED SALMON.

Starting in a Chinese mess house, a fire destroyed about half a million dollars' worth of property in Steveston, B.C., the morning of May 13th. Included in this loss are three salmon canneries, Japanese fishing boats and gear, and canned salmon. With a strong westerly wind blowing, and all the buildings dry as a cinder it was only a question of how far the fire would spread with nothing to stop it, before many other canneries would be consumed. The large cold storage plant of the British Columbia Packers Association was a great help in stopping the conflagration. At one time it looked as though the Cold Storage Plant would go, but with the assistance of their system of pumps for fire fighting, and the good work their staff of help put in under the direction of Mr. Geo. Cassidy, manager of the plant, they not only saved that plant, but also the Imperial Cannery to the east, and this is the largest salmon cannery in British Columbia. The greatest loss occurred at the Lighthouse Cannery, which is owned by Cliff & Lowman, and which they state will amount to \$250,000.00, but is fully covered by insurance. Included in this loss were 20,000 cases of salmon, mostly chums. This was a two-line cannery, and capable of canning 2,000 cases per day. They will endeavor to rebuild in time for this season's pack.

This company has a plant at Jervis Inlet, and a considerable amount of the salmon secured at that point are canned at their Steveston plant. They look for their greatest difficulty in securing the machinery, but believe they may be able to overcome this.

The Steveston Cannery, owned by Dr. Hepworth, and others, was a total loss, but all the machinery had been sold and removed. The Steveston Canning Co. had about 300 cases of salmon stored in the cannery, and this was lost. There was about \$7,000.00 loss on the buildings, and \$4,500.00 on the canned goods, all covered by insurance.

Mr. Frank Millerd, of the Gosse-Millerd Packing Co., Ltd., owners of the Star Cannery, which was a total loss, states that their loss will amount to \$75,000.00, fully covered by insurance. This was a two-line cannery, with a capacity of 2,000 cases per day. Last year was the first season the Star Cannery had been operated in four years. It was formerly owned by the Canadian Canning Co. There were 5,000 cases of canned salmon stored in the cannery, which was lost, and this was fully covered by insurance, and is included in the total loss of \$75,000.00. Mr. Millerd states that they do not think they will re-build this year. The Gosse-Millerd Packing Co., Ltd., also own the Vancouver Cannery, located on Sea Island, which is only a short distance from Steveston, the East Bella Bella Cannery at East Bella Bella, B.C., and the Sunnyside Cannery at the mouth of the Skeena River.

With the necessity of conserving all kinds of food, it is a shame to have lost all the valuable canned salmon which was destroyed in the fire. Much of this canned salmon was practically sold, but could not be transported overseas, and as a result was held in canneries. Another feature of the fire, which is bad, is the fact that approximately 200 salmon nets were destroyed, and this is not only a serious loss to the Japanese fishermen, but means that the fishing facilities for the coming season will be impaired just this much, as it is practically impossible to secure new twine, and nets, aside from the increased cost of the material. There were also about 15 or 20 fishing boats, worth approximately \$1,000.00 per boat, burnt, and this loss falls entirely on the fishermen. The total of this loss to the fishermen will approximate \$60,000.00 to \$75,000.00, and there is no insurance to cover it. The Japanese fishermen saved practically all their household effects, as the women worked hard, and did this part of the work most effectively, as they worked in squads. All working together on one house at a time, and leaving one of their number in the field where the goods were taken to see that the effects were not molested, and going from house to house. As this was done in squads it is easy to see that their method was most effective, and the unit system was apparently well applied in this instance. In all, about 600 Japanese and Chinese are without homes, and about twenty stores were destroyed in the fire.

Steveston had a serious fire last year, but fortunately none of the canneries were destroyed.

The waterfront in Vancouver is undergoing many changes at present, and the wholesale fish dealers are doing some moving round. The Union Fish Co. have been occupying the Western Packers old shed on the Gore Ave. wharf, but both they and Urquhard & Mills are to make a move, as the city is making alterations in connection with the municipal controlled fish market. There will be more in this connection later on.

FISH CURERS HAVE HEAVY FIRE LOSS IN VANCOUVER.

A fire that did about \$2,000,000.00 damage to a large shipbuilding yard in Vancouver, B.C., also burned the fish curing plant of Watson Bros. Their loss amounts to about \$20,000.00, and this is covered by insurance. There were about 400 barrels of Scotch herring, and 200 barrels of belly-cuts, besides many boxes of smoked herring of different kinds. This loss consisted of a fully equipped curing plant, as there was a complete smoked fish plant as well as every facility for salting, and re-pickling the salt herring. The plant will be rebuilt.

MAJOR-GENERAL A. D. McRAE.

The fishing industry of Canada has been singled out for special distinction through the recent appointment to one of the most responsible posts in the British Ministry of National Information, of Major-General A. D. McRae, C.B., who organized the Wallace Fisheries, Limited, of Vancouver, B.C., and who still exercises parental executive direction, though at a distance.

General McRae relinquishes his duty as Quartermaster-General of the overseas military forces of Canada to become Director of the new administration under Lord Beaverbrook, the Chancellor of the Duchy of Lancaster and Director of Propaganda, with a seat in the Cabinet, but not in the War Cabinet. In a word, the General is organizer of the Administration of Public Information in the United Kingdom.

At this time, it may be in the public interest to record the fact that it was Col. A. D. McRae, then Director of Supply and Transport of the overseas military forces of Canada to whom the major credit is due for the introduction of frozen fish into the rations of the Canadian forces, which led to the British War Office upsetting the traditions of centuries and letting Tommy Atkins have fresh fish to eat. Major Hughie Greene was the Ambassador of Sir Sam Hughes to Colonel McRae, but the latter, familiar with frozen fish as an article of diet and commerce through his having invested his money in the Wallace Fisheries, was the man in authority who had to be persuaded and Hughie Greene was not long in doing that, for he is nothing if not persuasive and gratifying. It is said of Hughie that if he cannot persuade a man, he sings to him; then a general surrender ensues. There is enough credit to go round, and it may be divided among Sir Sam, General McRae and Major Hughie Greene, though Hughie is bound to live in history as the man with the frozen fish, for no one can match him as a story-teller.

General McRae brought the Quartermaster Department of the O.M.F.C. to a high state of efficiency. The scientific rations diet worked out by himself and staff was considered far superior to anything previously supplied the troops and, indeed, was so meritorious that it has been adopted for use by other armies. On accepting his new appointment he has at his own request given up his Canadian pay and allowance, and tendered his services to the Imperial Government without pay. His selection by Lord Beaverbrook to organize the Department of Public Information recognizes the principle that the best minds everywhere should be more fully employed in the service of the Empire.

General McRae is only forty-three years of age. He was born on a farm near the little village of Glencoe, Middlesex County, Ontario. He spent several years

in the middle Western States and when the exodus of farmers from the United States to the Canadian West was on the eve of beginning he organized it on behalf of the Canadian Government, with a success that laid the foundation for the present prosperity of the wheat provinces of Canada. For some years prior to 1914 he resided in Vancouver and aided materially in fostering industry and encouraging capital to develop the natural resources of British Columbia. He not only re-organized and operated the Wallace Fisheries Limited, but also interested himself in whaling, believing that the fisheries of the Pacific were destined to become a source of great wealth to Canada, as they have proven. They are now an important factor in food conservation, enabling Canadians to substitute fish for beef and pork, so that the Allies may be fed.

When the war began he resigned from all his business interests in British Columbia, and offered his services in any capacity to the Canadian Government. General Hughes made him Lieutenant-Colonel in charge of all re-mounts west of the Great Lakes. A

noted horseman, he converted his knowledge to such good advantage that his work was highly commended by the Royal Commission that was appointed to investigate all war purchases. The protective measures he originated in connection with the purchases of re-mounts saved Canada large sums of money and formed the basis of present safe-guards. He went overseas early in 1915 as Director of Supply and Transport, being named Quartermaster-General with the rank of Brigadier in December 1916, and Major-General and C.B., in December 1917.

General McRae is a born Canadian and keeps in constant touch with all national tendencies. When the war is over his friends expect that he will return to his native country and play no small part in the readjustment of industrial conditions. His knowledge of men and affairs, his varied business experience and his virility presage continued success in the service of his country.

WILLIAM HAMAR GREENWOOD.

The Sockeye Run on the Fraser River

Its Present Condition and Its Future Prospects.

By CHARLES H. GILBERT
British Columbia Fisheries Department.

The history of the Fraser River Sockeye runs shows unmistakably that the three small years of each four-year cycle were overfished early in the history of the industry, and immediately showed the effects of serious depletion. These effects have continued in increasing measure to the present day, when we have but small remains of the generous runs with which the industry began.

During the early years, when fishing was confined to the region about the mouth of the river and drift gill nets alone were employed, no evidence exists of overfishing. The last cycle in which these conditions obtained was 1894-96. During each of the small years of that cycle (1894, 1895 and 1896), there were packed approximately 350,000 cases on the Fraser River and about 60,000 cases on Puget Sound. During each of those years, therefore, about 5,000,000 sockeye were taken from the spawning run and used for commercial purposes. It should have been considered at that time an open question whether enough salmon to keep the runs going had been permitted to escape to the spawning grounds. Strict inquiry should have been made to ascertain whether in addition to a surplus of individuals which could be spared, we had encroached on the spawning reserve, with the certain result that the runs would show a falling off.

Apparently, however, a third of a million cases a year could be safely spared, for the following cycle shows no decrease. If from the beginning, the pack had been limited, to a third of a million cases for each small year, apparently the runs would still continue in their primitive abundance. During the three small years of this cycle approximately 1,200,000 cases were packed.

But in the following period of four years (1898, 1899 and 1900), the traps on Puget Sound became an

important factor. While the British Columbia pack showed little or no reduction, it was now met by a pack on Puget Sound which nearly equalled it. The total captures during the three off-years of this cycle nearly doubled those of the preceding years and exacted an average toll of about 10,000,000 fish from the spawning run of these years. These total pack of the three years of this cycle was over 2,000,000 cases.

The result was quickly apparent. If 5,000,000 fish could be safely spared, this figure nevertheless must have been near the upper limit of safety, for when 10,000,000 fish were abstracted, the small years of the following cycle showed such a marked decline as to indicate that we had far overstepped the line of safety. It was then during the cycle of 1897-1900 that the first serious damage was done to the Sockeye runs of the Fraser river. By doubling the pack of three small years, not only was the surplus fully taken, but the necessary spawning reserve was seriously encroached on, with the result that in the small years of the following cycle (1902, 1903 and 1904), in spite of the increased amount of gear employed, the pack was cut in half, while the spawning beds at the same time were but sparsely seeded.

Is it any wonder that the voice of my friend and colleague, Mr. J. P. Babcock, of the Fisheries Department of British Columbia was raised insistently in warning and protest! The inevitable and disastrous trend of events should have been evident to the dullest. But the parties in interest refused to hold their hands and proceeded with the slaughter of the spawning remnant, while politically-controlled Commissions of Fisheries smugly reported "business as usual" and tacitly encouraged the good work to go on.

The result, as I have remarked, was quickly appar-

[illegible]

ent. In 1902, 1903 and 1904 the total sockeye pack of the Fraser was cut to 1,200,000 cases, and in succeeding years it has suffered still further reduction, the pack of the three off-years of a cycle never again equalling 1,000,000 cases. In 1906-8, it was 750,000 cases; in 1910-12, 880,000 cases; in 1914-16, 796,000 cases. And with each year, the amount of gear employed has increased by leaps and bounds. The small years of the present cycle may be expected to register a smaller total than any which have gone before.

As regards the big years of their respective cycles, it could not be shown prior to 1913 that any permanent impairment of the runs had occurred. But the accidental blockade of the canyon during that year prevented in large measure the seeding of the up-river spawning beds. The fish that should have reached them died without spawning below the canyon. The results were only too conspicuous in 1917, and show beyond question that the blocking of the canyon was a disaster of the first magnitude. It has destroyed the big run for all time, unless extraordinary measures are taken to restore it. The "big year" must now range itself in size and importance with the "off years." There is no reason to hope that any measures would be effective in now pass it. So closely were the Sockeye gleaned this past season that the proportion of escape was reduced to a minimum. The reports of Mr. Babcock concerning the condition of the spawning beds indicate that far less spawn was deposited than in 1913. There is no reason to hope that any measures would be effective in now restoring the "big year" of the cycle, which would not be equally effective with the "off years."

These are the facts with which we are confronted: The three off years very seriously impaired, with an almost certain prospect of worse to come during the present cycle; and the big year on which we have principally relied heretofore, a thing of the past. Nothing short of heroic remedies can restore the Fraser to even a fair measure of productivity. Yet the spawning grounds are uninjured and unsurrounded by any large populations of either natives or white; and the river channels are unpolluted. The fields are ready as ever for the harvest. We need but to spare the seed.

In planning to replenish a Sockeye stream, the question is at once raised: "To what extent can we depend on hatcheries?" Unfortunately no certain answer can be returned to this question. Certain sources of waste and loss in natural spawning are undoubtedly eliminated in the hatcheries. The dangers which threaten the eggs—and these are many and serious—may be largely avoided. From a given quantity of eggs the hatcheries without doubt can produce a much larger number of fry than is possible in natural propagation. Such doubts as we may entertain concerning the effectiveness of Sockeye hatcheries must deal, it would seem, with less favourable conditions under which the fry are liberated and possibly the less active avoidance of their enemies on the part of hatchery-raised fish. Some of these dangers may be minimized by the adoption of better methods. Certain it is, much of the hatchery work has been done with little intelligence and less conscientiousness. Much better records may be made in the future. But to the present time, there is little to indicate a high efficiency of Sockeye hatcheries. Sockeye streams in Alaska or elsewhere, which are provided with hatcheries, seem to conserve their runs little if any better than the streams without hatcheries. And specially successful years at the hatcheries have not been followed by increase of the runs.

It is clear then that in planning the rehabilitation of the Fraser river, it will be unwise to place too much dependence on the work of hatcheries. Measures should be adopted which will promise results in any case, and then the help of the hatcheries availed of to the full extent that they can furnish aid. In any event, the hatcheries can work no miracles, and can produce no salmon fry without salmon eggs. And it must be borne in mind that on the upper river, where are located the greatest spawning beds of the river basin, no hatchery can now operate, because spawning fish no longer reach this section in sufficient numbers to furnish the eggs. The hatcheries located on the upper river have been compelled to close their doors, so greatly since they were built have the runs become depleted.

The one all-important remedy for the existing situation is to permit more fish—many more fish—to escape capture and become spawners. Until adequate measures are taken to that end, it is useless to discuss any minor remedies. If we hope for results, we must act in no pieayunish fashion—we must deal in large quantities. The mortality among salmon is great. At every stage of their lives, their enemies in infinite numbers and variety lie in wait. A Sockeye egg, under natural conditions, has not more than one chance in a thousand to develop and survive to maturity. If a female lays 2,000 eggs—and this is not far from the usual number—not more than two of these on the average will proceed to sea, escape their enemies and return to spawn at term. Nature has set the scene for a vast slaughter. The utmost we can ever accomplish by way of protection covers only the life of the egg and the younger stages of the fry. Beyond that, Nature will have its way and will take its vast toll. To keep a stream stock with salmon, this wastage must be allowed for. An extensive spawning run must be maintained, all the more extensive, if, as in the present case, the stock of salmon is already seriously depleted and we wish to restore it.

The Fraser river presents unexampled opportunities for productiveness and wealth. The people need the enormous supplies of highly valuable food which the river is able to produce annually. It should not be permitted to remain at its present low rate of production. Those now engaged in the industry of preparing this food-product for market should voluntarily surrender for purposes of propagation such quota of the run as will not only arrest the process of depletion but will restore the runs. If they are unable to agree on this, the Governments should step in and control the matter. In no way can the Governments escape the responsibility. The people need the food. They will come to need it in future years even more sorely than they do at the present. No private interests should be permitted to stand in the way of restoring this producer of food to the public.

If the Fraser river were a private monopoly, to be henceforth wisely handled, there can be no doubt it would now be promptly closed to commercial fishing for a term of years, and the entire run—now so sadly dwindled—dedicated to purposes of propagation. This should be done without further delay for at least one cycle of four years, and the results carefully noted by a continued study of the spawning beds. Fortunately, there now exist adequate data for comparison. No other Sockeye stream has received such close and discriminating study. Through the wise efforts of Mr. J. P. Babcock, annual inspection has been made of the spawning beds of the entire watershed, and predictions of the runs four years thence have been fearlessly made. It is a matter of record how consistently these prophecies

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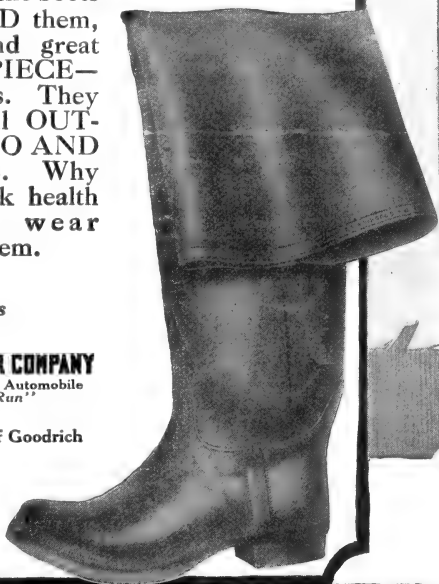
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have been fulfilled. We are now, therefore, in possession of information to enable us to judge with some degree of accuracy the effects of any remedial measures we may adopt. If the river were closed to fishing for one cycle of four years, we could know fairly well in advance what the result was to be, and could then either open the river and sound to restricted fishing, if the condition should warrant, or if necessary close it for a further period of four years. This is the only method to restore the Sockeye run with any promptness and with any certainty of success.

So great has been the reduction of the runs, we can not predict with any optimism, what would be the result of less drastic measures. If the amount of fishing gear in use be limited and the weekly closed season be extended, undoubtedly a somewhat larger proportion of fish would reach the spawning beds. But it must be borne in mind that it is not the proportion of a given run which spells success, but the actual number of spawners. The whole of a sadly depleted run may be all too few to produce the desired results. It is greatly to be feared that any restrictions in the present case which would be so moderate as still to leave it profitable for canneries to operate in the face of such reduced runs, can accomplish little or nothing towards the restocking of the river. The only wise course—the only adequate remedy—is to close the river for a term of years, by concurrent action of the two Governments. We might of course do nothing, and thus permit the run to decline to a point where commercial fishing would become largely if not wholly unprofitable—in the hope that when parties in interest no longer existed, it might be possible to adopt such measures as would then build the run up again. But in that case, a still longer period would be necessary, with far less probability of success.

From the evidence taken at the sittings of the International Commission representing Canada and the United States held here a few days ago there seems to be no method in sight for the preservation of the halibut fishing on the Pacific. The commission was composed of the Hon. J. D. Hazen, Chief Justice of New Brunswick; George J. Desbarats, Deputy Minister of Naval Service, and W. A. Found, Superintendent of Fisheries, representing Canada; and the Hon. W. C. Rodfield, Secretary of Commerce; E. F. Sweet, Assistant Secretary of Commerce, and Dr. Hugh Smith, Commissioner of Fisheries representing the United States.

It would appear that the fishermen engaged in the business have no solution of the vexed question. Of those who appeared before the commission and gave evidence there seemed to be a disposition to think that the creation of a close season by international arrangement for about three months in the winter, might be of assistance, inasmuch as that was the time when the most of the fish spawned. It was not pretended, however, that this would be an assured way of placing the industry on a firm footing again by restocking the banks. It was hoped, however, that it might affect some saving.

Another proposition that was put forward was that offered by some of the scientists that had investigated the situation. This was that the sea area within which the fishing was carried on should be divided into zones and a close season established for each of these in order for a term of years so as to allow the stock-

ing of the banks within these areas. This did not meet with general favor. It was felt that it would not have the desired effects and that it would in any event interrupt other forms of fishing that might be carried on within the zones as created.

Mr. T. H. Johnson, manager of the Canadian Fish and Cold Storage Company of Prince Rupert, was asked for his opinion and was forced to admit that he could see no satisfactory solution for the trouble. He said that he would gladly welcome some method of preserving these halibut as it meant so much in the industry, but he could not find a way to safeguard the fish. The halibut was a slow developing fish and for that reason the banks were easily fished close to depletion. The winter close season did not offer to his mind anything like a satisfactory solution. Neither did the zone system give promise of being a satisfactory way of working out the proposition. The position of affairs as it presented itself to him seemed to be that the halibut industry on the Pacific would have to follow the course it had elsewhere, that is it would have to give place to some other line of the industry like the flat-fish, and the cod, and similar fish.

The evidence went to show that there was no possibility of limiting the size of halibut that it would be possible to take for commercial use. One could not regulate the size of fish that would bite at the bait and be caught on the hooks. Once a fish was hooked it was necessary to use it for it was doubtful if it would be of use afterwards. The evidence went farther and showed that the fishing was now being carried on farther and farther away from the old fishing banks.

The result of the investigations here on this point indicate that without doubt the halibut industry is doomed as far as the Pacific is concerned. The taking of other varieties that are to be caught by means of the trawl seems to offer the solution. Already that system of fishing has come into vogue here through the demand for substitutes for beef and pork which are needed for overseas. It is fortunate that such rich supplies are to be obtained on the banks off Prince Rupert.

PACIFIC FLATFISH.

If fishes can indulge in imprecations then it is more than possible that the various classes of flat fish that find their habitat on the banks of Hecate Strait off this port, will be joining in a song of hate against the German people and the war. From the beginning of things these fish have had the banks to themselves, at least in so far as man's interruption is concerned. The soles, brills, plaice, witches and skate that it is found about there have been allowed to live out their existence without human interference.

Now it would appear that this order of things is to be altered altogether and from now on these banks, rich in their harvest of the very best of fish for the table, are to yield their toll in the support of the human family. Millions of tons, it is safe to say, have been yearly going to waste there, while the prices of other fish produced on the Pacific coast and of various meats and other food stuffs have been reaching points higher and higher each year.

It remained for the war to bring about the changes necessary to create a demand for this fish. The existence of these great feeding places for the fish men-

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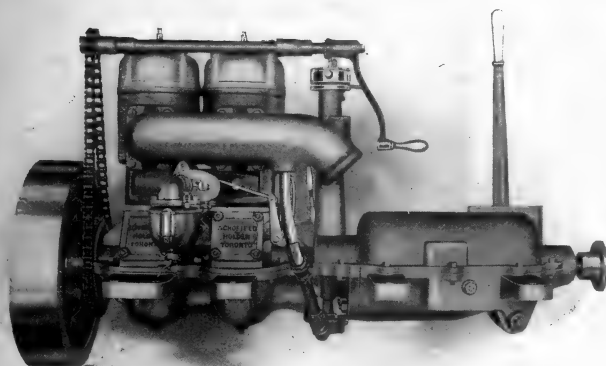
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tioned was known to the fishermen, but the demand had been created and the fishing of these places was allowed to be neglected.

With the war came the demand for the economy in beef and pork that the needs of the troops and the people of the Allied nations might be fed. Western Canada was called upon to cut down its usual quota of these food stuffs and to substitute for them fish. The Pacific coast had up to this time been famed for the most part for its supplies of halibut and salmon, and in consequence of this with an ever-increasing price for these varieties, halibut and salmon had passed practically into the rank of luxuries with such a wide demand existing for them that they were not to be considered as forming any part of substitute food for the commodities needed overseas.

The Food Board had to look elsewhere for some fish that would take the place of these meats and after continued consultations and conferences of those interested it was decided that the putting of trawl caught fish on the markets of the western provinces was the only solution. The quality of the fish was all that could be desired. It remained only to get it introduced to the people that had not used that form of food to become acquainted with the merits of these and the market would be established for all time.

The chairman of the Board at the time was H. B. Thomson who knew the West from long residence and his active interest in the move was not difficult to secure. He, in fact, was strongly in favor of the attempt to introduce this valuable fish that had up to that time been allowed to go to waste and he took an active part in the negotiations looking to the adoption of the course that was taken.

The late H. C. Brewster, then Premier of the Province of British Columbia, who was himself a fish man, lent his advice and co-operation in connection with the movement, while Mr. J. P. Babcock, the deputy head of the fisheries department for the province was very active in the move from the start. To him was assigned the task of seeking the consent of the fishermen engaged in the actual taking of the catches to the lowering of the price demanded for the fish caught. He met the union here and as a result there was reached an amicable agreement whereby a reduction in price was agreed upon.

In this undertaking the co-operation of Mr. T. H. Johnson, the manager of the local packing house, the Canadian Fish and Cold Storage Company, proved the most important factor in reaching the decision that was reached whereby these fish were to be placed on the markets of the West at very low prices. His services and advice was always available. It was most valuable, also from the fact that his company had the steam trawlers available to start in this work. He had as one brought up in the fish business in England exact information along the line of the trawling business also. Then in addition to this Mr. Johnson had tested the trawling on this coast some months before that and knew exactly what it was capable of producing. He was able to undertake to see that the demands of the western part of Canada were met in this respect and to do it at once. Accordingly as soon as the arrangements were entered into and the price set the steam trawler James Carruthers was put into commission and ever since has been landing every two days or so its complement of these fish and so supplying all the demands put upon the Pacific coast.

Capt. Wallace, of the Food Board, who has made a very careful inspection of the trawling operations on the Pacific has expressed himself as eminently satisfied with the product of this coast. He says that the people of the prairies should feel themselves fortunate to be able to obtain fish like the flat-fish taken here at the prices at which grey are being produced. He alludes to the fact that the people of the old land would at any time previous to the war, have considered themselves in luck to have been able to buy such fish as these at the prices at which they are offered.

These trawl caught fish are proving very economical as well as being of first quality. The fattish that are taken are dressed ready for the pan before leaving the plant of the Cold Storage here. The heads and the entrails have been removed as in the case of the cod fish that are taken also in the trawl, but in addition to this the company trims the tails and the fins off the flatfish before they are sent on to the markets on the prairies. Reaching as they do the markets in a frozen condition it is simply a matter of defrosting before they are made use of by the cook.

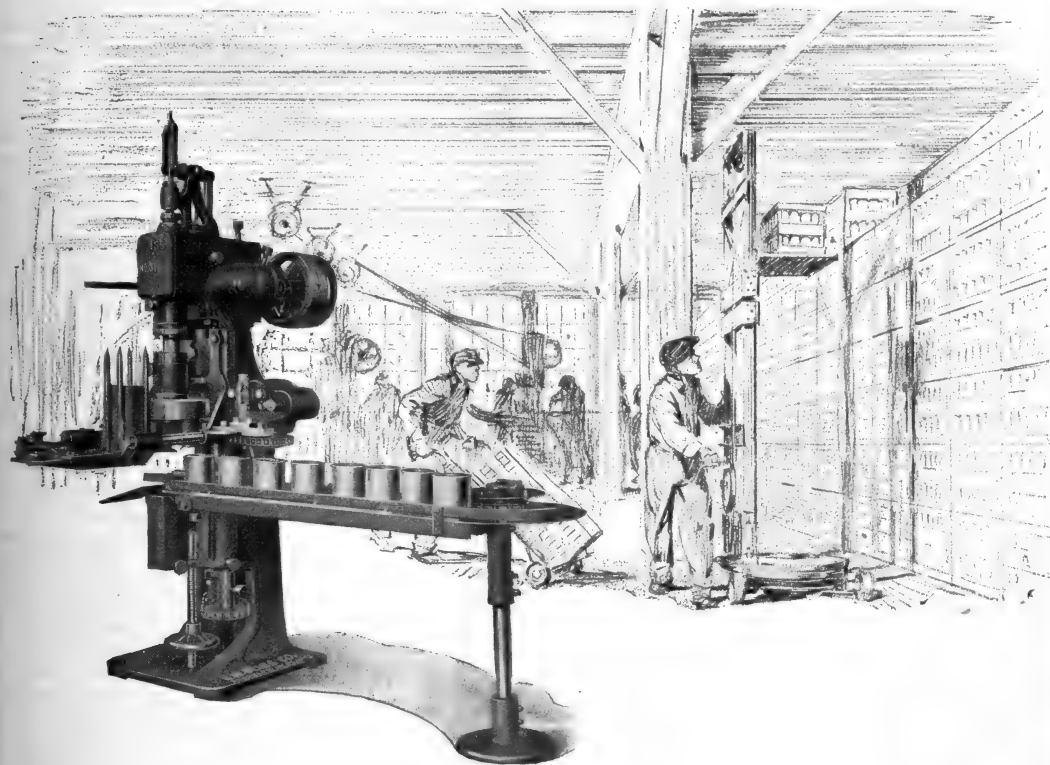
AMERICANS TREATED FAIRLY.

If the International Fisheries Commission that is enquiring into matters affecting the industry as between Canada and the United States does nothing else on the Pacific coast other than clear up some of the misconceptions that have been created with respect to the port of Prince Rupert in its relation to the fishing industry, the sittings will not have been in vain. The American Secretary of Commerce, Hon. W. C. Redfield, at the sittings in Prince Rupert, won for himself the admiration and respect of the people of the Pacific coast fishing centre in a very peculiar way by his frank manner of dealing with the charges of discrimination that had been made against the Canadians.

In the city of Seattle, at the sittings held in that centre there were charges preferred against the port of Prince Rupert, the purport of which appear to have been that there was a concerted action on the part of all the interests in the chief halibut port of the Pacific to make it uncomfortable for the Americans. It is quite easy to see why such attempts should be made when it is taken into account that Prince Rupert in the short time that it has been a shipping port has secured about one-half of the entire halibut trade of the Pacific and being the nearest centre to the fishing banks from which rail shipments can be made has become the practical home port of nearly all the fishing vessels engaged in the halibut business irrespective of what flag these may fly.

The Commission came to Prince Rupert from Seattle with the ideas planted in their minds that the Dominion Government, the G. T. P. railway and the Cold Storage of the Canadian Fish and Cold Storage company were all working in conjunction to make it bad for the American fishermen that came to Prince Rupert.

These erroneous ideas were soon driven from the minds of the commission if they ever got a seat there. In nearly every case also, the contradiction to the reports that had been made to the Commission in the south came from Americans themselves. Representatives of the American interests concerned who were present at the sittings in Prince Rupert and who attempted to press the views of their employers upon the commission were finally dealt with by the Sec-



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retary of Commerce in a most decisive way. At one point after a good deal of time had been occupied by these American representatives to little purpose other than to introduce matter that Mr. Redfield would not allow to go on the records as being unrelated to the subject matter of the investigation, The Hon. Secretary turned on the representatives and said: "the Americans present before this commission are here by courtesy of the American members of the Commission. I do not think it is proper that they should occupy the major part of the time here."

The G. T. P. was called upon to make its position clear on the score that it had discriminated against some of the American interests. One of the most serious of these charges that had been laid against that company was that it would not provide the American companies doing business in the city of Prince Rupert with sites for cold storage plants. The chief complaint was that of the Booth Company. G. T. P. officials including G. A. McNicholl, the assistant general freight and passenger agent, were able to contradict this. Mr. McNicholl remembered the preliminary negotiations that had been carried on for the securing of a site for the company to do business. The fish company had desired a site which the railway was reserving for other purposes in the very centre of the waterfront. This was refused and a site was offered at Seal Cove near the site where the present cold storage is located and which under the arrangements which the railway company had made was the location where the industrial concerns were to be located.

The sites that the Booth and the other companies now occupied on the railway wharves were only temporary ones and an undertaking was given that if the location was required to be vacated the railway would give another location at Seal Cove and would recompense the fish companies for the expenditures that they had made on the temporary locations. The agreement made between the companies was produced which bore out this contention.

On the point of discrimination in the matter of handling of freight and express as far as fish was concerned, Mr. McNicholl said there was no distinction made between Canadian and American fish. There were no rebates made on Canadian fish by the Government except the payment of two-thirds of the charges by the Government on the trawl caught classes of fish that were shipped to the prairie provinces and which was done to induce the use of these there.

The representatives of the various American companies doing business in Prince Rupert were called in turn. They all agreed that the practice in the port was to make no distinction. Canadian and American vessels were treated alike in the matter of bidding on the fish. No distinction was made looking to the giving of the Americans any worse deal than the Canadian. The fish were bought at auction on the exchange and the highest bidder took the fish so that there was no preference in the matter of companies. The Canadian Fish and Cold Storage Company was given no extra advantage in the buying.

Mr. Hanson, the American consul at this port, gave excellent evidence with respect to the conduct of affairs here. He said that he had investigated the situation for the purpose of ascertaining whether there is any discrimination against the American interests and he had found that there was no foundation for the

charges that had been made. The Americans were treated just the same as Canadians and he had no complaints.

He corroborated the evidence that had been given as to the selling of the fish and the uniform basis upon which all were placed. He also found that the Cold Storage Company treated all alike as far as he could find out.

A point which the Secretary of Commerce wishing information upon was that with respect to the transfer of American bottoms to those of Canadian register. The American Consul stated that of all the transfers that had come to his attention there was not one that had been made for the evident purpose of gaining some advantage. The transfers were legitimate purchases made by persons who wished to acquire the vessel and not for the purpose of reaping some benefit by making it a different bottom.

Mr. T. H. Johnson, Manager of the Canadian Fish and Cold Storage, was an important witness and was fully examined by all sides. His evidence was substantiated on all points by American fish buyers and captains and others. His company, he said, made no distinctions as between the nationality of the dealers in the transactions. The cold storage took its chances on the open market with the other buyers and when it came to the delivering of the fish at the cold storage there was no discrimination. The boats were unloaded and had their catches taken care of in the order in which they reached the wharves of the company. In this respect the boats owned by his own company fared just the same as those of other owners.

In the matter of the freezing and storing of the custom work he acted in the same way. There was but one set of receipts and other papers used and all were treated alike. There had been no complaints at the way the work was done and this was testified to by other dealers in fish that were using the plant. He explained that on occasion he had sold frozen fish of his own in order to make room for the fish coming in from other dealers because he felt it was the duty of the company under the subsidy that had been drawn down by them to take care of all that offered.

The cold storage was equipped with sharp freezing capacity enough to take care of the whole catch of fish on the Pacific coast if need be.

The evidence of Mr. McNicholl went to show that the G. T. P. had for the direct benefit of Ketchikan under an agreement made between the Montreal office of the railway and the authorities at Washington put the American steamer Tillamook on the run from Prince Rupert to the Alaskan port. That boat was put on to take care of the fish shipments from there, but it had not been patronized; the railway had lost money on the boat and had been obliged to use her in other lines of business.

The Secretary of Commerce wanted to know of various witnesses if they knew of any other reason why Prince Rupert was the port where the fish were landed other than the fact that it was the port nearest the fishing grounds that had railway connection with the outside. To this they all agreed.

Before the sittings closed Mr. Redfield made it clear that he did not approve of the suspicion that had been cast upon the port of Prince Rupert in this matter. From his place on the commission he said, "As I grow older and gain wider experience, the more I am convinced that government by suspicion is a hideous mistake. There was too much of that he said in the world,

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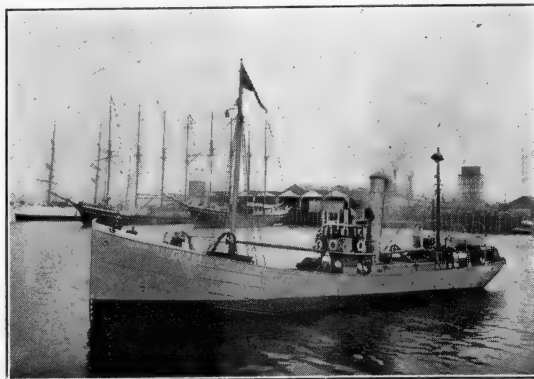
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Hawkesbury, N.S.

and too much was governed by that which was not founded on fact. Too often half truth was made to guide actions. It was wise to get together and get the whole truth. A closer acquaintance often removed a great deal of doubt. It was for that very reason he valued the sittings of the commission on which he was serving.

Referring to the relations between the two nations that were represented on the commission, Mr. Redfield said, "the interests of these two great people are mutual and not divergent. Anything developed on land or sea by either one of these nations meant gain

for the other as well as for the one that developed it."

He went on to say that commerce was not commerce unless it were for mutual benefit. The thief or the fraudulent dealer might gain by a one-sided transaction; but not so the trader and the merchant.

At a banquet that was tendered the members of the commission in the city of Prince Rupert, the war was dealt with by both Mr. Redfield and Hon. Chief Justice Hazen, the Canadian Representative. The American visitor gave a lot of inside history of what the United States was doing in connection with the carrying out of the war operations.

Fish is Dried "Aboard" in Cuba

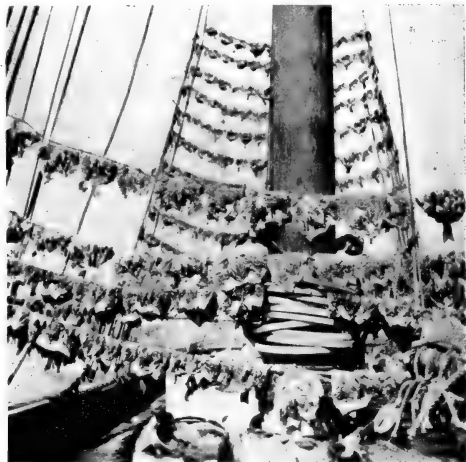
Written by VICTORIA HAYWARD; Photographs by
EDITH S. WATSON.

Readers of "The Canadian Fisherman" may be interested to see how fish is dried, in Cuba. This picture was taken on a fish schooner's deck as she lay at anchor, in Havana Harbor, under the old Spanish fort of Cabanas.

The drying fish is one of the "groupers"—a tropical fish much prized for the fine flavor of its firm, white flesh. Broiled grouper steaks, which have previously been salted for a day, are prized as one of the most delicate of southern dishes, and are in high favor among connoisseurs of food in these regions as a breakfast dish practically without equal!

Cuba, who has no white bread and scarcely any corn meal in these days of war, is looking more and more to her fish to feed her. And she is trusting to sun and salt to render her fish sound when it reaches her Spanish kitchens. As a local wit laughingly put it,

rotten in an hour or so, whereas up the mast the air blowing against it softens the piercing sun, and the fish dries right through evenly. The festooning of the ropes, however, takes some time, and only the slow moving man of these sunlit zones would care about the exercise. The fish is practically cured in a day, so it is not so bad after all. When the fish is dry it looks very much like the "jerked beef" from South America, unloading at one of the nearby piers, and with which it shares the menus of the city restaurants. In fact, the best people, keeping the finest tables in the tropics, prefer fish to meat every time! All fish here is spoken of as *pescado*; and there are legions of ways of cooking and serving it. Some of these Spanish menus for "*pescado*" would undoubtedly be welcome among Canadian cooks, greatly increasing the popularity of cod in all households. "But this," as Kipling says, "is another story!"



Drying Fish.

"These schooners have become square-riggers with their 'yards' of fish, daily mounting higher on the mast," in the interest of "food."

The crews of these schooners of course all speak Spanish, and have their own customs and ways of doing things. One wonders why they dry the fish "aboard" instead of "spreading" it ashore, as we do our cod. But then you soon see that in this terrific sun, one side would be dry and the other practically



Drying Fish.

Another reason for drying fish "aboard" in these tropic regions is that here it is safe from such intruders as rats, cats, and dogs, and catches none of the gummy dust that is the bugbear of Cuba, clinging to everything, and undoubtedly capable of spreading germs galore to any article of food, especially the fish.

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
- OF FISH PRODUCTS -

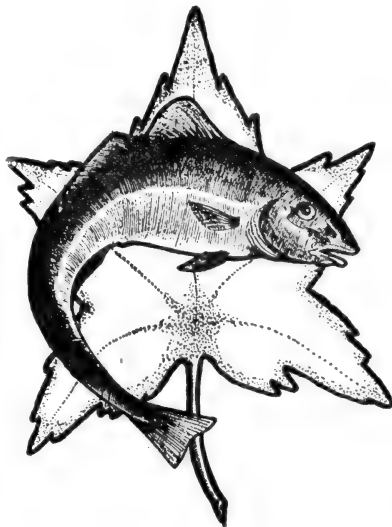
F. WILLIAM WALLACE
EDITOR

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Vol. V.

MONTREAL, JUNE, 1918

No. 6

HAVE YOU GOT IT IN YOUR DIARY?

The 6th, 7th, and 8th of August.

These are the dates of the Annual Convention of the Canadian Fisheries Association. It will be held at Halifax, N.S., on these dates—the 6th, 7th and 8th of August, and the local Committee there, as well as the Executive and Directors of the Association at headquarters are making every preparation to take care of and entertain a large attendance. Don't disappoint them—and what is of greater importance—don't fail to be present and take part in the discussions of the many questions of vital importance to the fishing industry that will be taken up. This is the first time that a special effort has been made to bring together representatives from every section of the industry and every part of Canada where the business of fish production and distribution maintains, and to crystallize the views of such a gathering on questions of great importance to the industry in which each is engaged.

There will also be present many visitors from the fishing industry of the United States and Newfoundland. A very cordial invitation is extended to all those from these countries who can attend.

It will be an occasion when every person interested in the fishing industry can combine a pleasant holiday with an opportunity to take part in an important

piece of work and to make the acquaintance of co-workers. It will also be an occasion when the people of Canada and the United States will have an opportunity to learn and judge of the size and importance of the Canadian fishing industry. Other industries have long since learned to appreciate the value of such conventions. They make for better conditions and bigger business. They are well worth the time and expense. So come to Halifax for the 6th, 7th and 8th of August and bring your lady friends! All are welcome.

It will assist the work of the committees in charge if those intending to be present at the Convention will notify either Mr. S. Y. Wilson, President of the Canadian Fisheries Association, Halifax, N.S., or the Secretary of the Canadian Fisheries Association, 45 St. Alexander Street, Montreal, Que., as early as possible.

The programme for the Convention will be ready for distribution in a week or ten days, and copies may be had on application to either of the above addresses.

TRANSPORTATION OF FISH.

The first great problem of the fishing business is to produce the fish. With the uncertainty of the weather, the uncertainty of location, high costs of labor, equipment and insurance, the problem is a try-

ing one. But it is easy when compared with that of taking care of the fish when caught, particularly if they are to be marketed fresh.

The nearest port to the Grand Banks—the greatest fishing grounds of the Atlantic—is Canso, which lies at the entrance to the straits that separate Cape Breton from the mainland of Nova Scotia. Canso, which is without rail connection, is fifteen miles by water from Mulgrave, the nearest railway station. Mulgrave is 900 miles from Montreal, and over 1,200 miles from Toronto—the two centres of population and distributing points for Central Canada. Mulgrave is even farther from the markets of the United States. But Canso and Mulgrave are the natural landing ports for the products of the Grand Banks and with reasonable attention an important traffic, originating at these points, could be built up.

The fishing boats bring their catches into Canso, where they are washed, sorted, iced and boxed. They are trans-shipped from boat to rail at Mulgrave and are again washed, sorted, iced and re-boxed in smaller packages at Montreal and Toronto, when intended for outlying points in the Provinces of Quebec and Ontario. During the long rail haul from Mulgrave to Montreal and Toronto the bunkers of the refrigerator cars carrying these boxes of fish must be kept well filled with ice or the fish deteriorates.

Heretofore the most satisfactory way to transport these boxes of fish was by express. But the quantities have been increasing so rapidly that the express trains were becoming overloaded, and the number of cars built for travelling at express rates were not equal to the demand. So that much of the fish had to travel these long distances by the ordinary freight train, and often arrived at their destination, after many delays and mishaps without ice and with the fish in poor condition. As a matter of fact, they have been arriving so often in an unmarketable condition that the pending claims against the railroads amount to tens of thousands of dollars, and the efforts and expenditures of the Canada Food Board and the Department of Naval Service to increase the consumption and production of sea fish are being seriously interfered with by reason of the fish reaching the consumer in poor condition.

Under these circumstances something had to be done, and at the request of the Canadian Fisheries Association the Department of Naval Service summoned representatives from the railway companies, express companies, the Food Board and the Canadian Fisheries Association, to a meeting which was held in Montreal on Thursday, June 20th. All interests, with the one exception of the C.P.R., were well represented.

Notwithstanding the many demands upon his time and attention, Mr. H. B. Thomson, Chairman of the Canada Food Board, was present in person and struck a chord of seriousness and determination in the meeting, by making plain at the outset that something had to be done. By reason of the decreasing supplies of

cattle, hogs and sheep, a greater effort would have to be made in the future than in the past to conserve meats. The most easily available substitute was fish, of which Canada was fortunate in having such large resources on her Pacific and Atlantic Coasts. These were now being produced in increasing quantities. The people were responding to the appeals for a larger and larger consumption of fish, and the railway companies simply had to find ways and means for the transportation from the producer to the consumer.

After much discussion arrangements were made for a fast freight train to be known as "The Sea Food Special" beginning with Thursday, June 27th. This train will leave Mulgrave on Thursdays, Fridays and Saturdays of each week. It will make the trip to Montreal in forty-eight hours and to Toronto in seventy-two hours. The existing express service will be able for the present to take care of the shipments of fresh fish on the remaining three days of the week. This is a very satisfactory arrangement and should work well if producers, transportation companies, distributors and consumers each do their part.

C. F. A. AND C. F. B.

The initials at the head of this article should be familiar to every man in the Canadian fishing industry. They stand for the two big brothers of the industry—organizations which have done more to develop our fisheries than anything else—namely, the Canadian Fisheries Association and the Canada Food Board.

The C. F. A. is of the Industry itself. The C. F. B. is a war department brought into existence by the exigencies of the conflict overseas. Both have been able to help the other, and the Industry has reaped the benefit.

The Canadian Fisheries Association came into existence at a time when our fisheries was like a sprawling infant unable to talk or walk. The Association gathered the trade together and marshalled them into something like cohesion and got a line on things from Coast to Coast. It gathered information about our fishery resources; the plants, equipment and the men engaged in it. It brought the representative men together to talk over things and tackle problems collectively, instead of individually. It has fought and won a good many concessions for the trade—concessions which could never have been secured by individual effort. It now has branches everywhere, and practically every man in the trade is a member.

When the Canada Food Board started in to urge fish as a substitute for meat it had a lot of information to gather. Its first move was to get in touch with the Canadian Fisheries Association and get a line on supply and distribution. The Association had the information and furnished it. The Association's Secretary, Capt. F. W. Wallace—the one man who was intimately acquainted with Canada's fisheries and the men engaged in it—was commandeered by the

Board and placed in charge of the Fish Section. Through the Association, Wallace was able to do things that could never have been accomplished otherwise.

The Association's members have co-operated most loyally with the Food Board. Production has been speeded up and prices have been kept down to pre-war levels. Confidential information of the greatest value to the Board has been furnished whenever called for. In return, the Food Board has put fish "on the map" as a food commodity, and within nine months doubled the Canadian consumption of fish. By the end of 1918 it should be trebled.

Co-operation is the secret of success in practically everything. Co-operation will win the war. The man who cannot see the advantages of being a member of the Canadian Fisheries Association belongs to another age, or is so utterly selfish that he leaves others to do the work he should be doing himself and reaps the benefit.

C. F. A. and C. F. B. are two organizations which are helping to win the war, and at the same time building up an Industry which Canada will need in the future to help pay her debts. Don't forget it!

TIME TO ORGANIZE A NAVAL RESERVE.

Never since the seventies have Canadians heard or read so much about our future as a maritime nation. Shipbuilding in wood and steel has experienced a wonderful awakening throughout the Dominion, and ships are being built in the sea and lake ports from Coast to Coast. Canada has now a considerable naval force patrolling our coasts and Navy Leagues are being organized everywhere to interest our citizens in nautical affairs and to imbue our youth with seafaring instincts.

This magazine has preached for years the importance of inaugurating a Naval Reserve and enrolling our fishermen in it, and we intend to hammer away at the subject until something is done. There are over a hundred thousand men in our fisheries and coasting trade—magnificent material to build up a strong reserve naval force. Newfoundland has had a Naval Reserve for years, and Newfoundland seamen have and are doing splendid work in the Royal Navy. Newfoundland's reservists are largely fishermen.

Canada should have had a Reserve of her fishermen years ago, but a good start might be made now among the men not eligible for military service. Small companies could be enrolled at the various ports and given from six to eight weeks training in rifle drill, gunnery, signalling, etc., and a short cruise of a week or two on the patrol craft.

It is hard to forecast how long the war may last or into what zone naval warfare may shift. The German submarine is sinking and destroying on the American coast now, and by next Fall a huge patrol fleet may be necessary. The men to man the ships may be neces-

sary too. Now is the time to train them, and in training fishermen, the Navy has seamen who only need the Naval drill to make them useful. The short training course will enable them to keep up fish production until they are required for active service.

We are confident that the plan will be put in operation some day, but there is no time like the present.

EVERY DAY A FISH DAY NOW.

One of the most striking features of the present day fish trade is the elimination of Friday as an exclusive fish day. Reports from the trade throughout Canada show that Monday is one of the biggest fish selling days, with Tuesday and Thursday next. The public are eating fish now on Tuesdays, Wednesdays and Fridays, and the business is spread well throughout the week.

This is one of the most gratifying features of the new stimulus which the trade has acquired from war exigencies. For years, the Canadian Fisheries Association worked hard to swing the public away from the Friday fish day. The Tuesday fish day was started by the Association with some measure of success to balance up the slack end of the week, and when the Food Controller made Tuesday a meatless day, the trade benefitted materially. The meatless day was latterly switched to Wednesday, but the general public included Tuesday as well, with the result that three fish days now obtain.

The appeal to eat more fish has now got the public eating fish on almost any day, with the biggest trade, of course, on the Wednesday and Friday. Gone, we hope forever, are the days when the fish dealer had to loaf from Saturday to Thursday.

A TRIBUTE TO H. B. THOMSON.

The fishing industry of Canada owes much of its present day increase in business to the Chairman of the Canada Food Board—Henry B. Thomson. He came into his onerous office with a comprehensive knowledge of the fishing trade, and though never directly engaged in fish or fishing, yet his experiences on the Pacific Coast brought him in touch with many phases of the industry.

Prior to his joining the Food Board, he was a member of the Salmon Fisheries Commission which held an investigation into conditions on the Pacific Coast in 1917. The knowledge he gained while on that work gave him a broad insight into the vast resources Canada possessed in her fisheries and the evidence of fishermen and producers taught him the difficulties the industry labored under, and also something of the work involved in the catching and marketing of fish.

His predecessor, Hon. Mr. Hanna, had already learned the value of fish as a substitute for the meats so urgently needed overseas. He preached the ne-

cessity of eating more fish and succeeded very well in stimulating consumption, but consumption was confined to the larger centres. Mr. Thomson went further. He made himself familiar with all phases of the trade from coast to coast, and personally outlined plans for introducing fish into the places where they were not eating the proportion required.

The Food Board chairman has a hundred other matters to occupy his attention these days, but, busy and all as he is, he always finds a moment to give personal attention to some feature of the campaign to increase the production and consumption of fish. He has also acquired sufficient knowledge of the industry to know when action is needed and cannot be stampeded into doing things which would have a deterrent effect upon the object desired.

The efforts of the Board to bring food fish to the fore has been actuated largely by him. He has the faculty of quickly adopting or rejecting suggestions. His "yes" or "no" is final, and when he starts something, he expects results.

The best evidence of his success may be adduced from the fact that the consumption of fish throughout Canada has more than doubled within the last six months; several new varieties are now permanent staples; production has been increased in many instances, and most wonderful of all, abundant supplies of familiar species can be purchased throughout the Dominion at pre-war prices. The great objective of saving meats for overseas is also being slowly but surely attained.

STEAM TRAWLING IN CANADA.

The year 1918 will show notable advances in fishing methods by the increasing number of steam trawlers which are being added to the Canadian fleets on the Atlantic and Pacific. On the West Coast, the steam trawler "James Carruthers" is engaged in trawling for flat-fish and cods out of Prince Rupert, and if the trade warrants, her owners, the Canadian Fish & Cold Storage Co., Ltd., will place two more trawlers in the service. The company already have the vessels and merely have to change the gear on them from long-line halibuters to otter trawlers. The B.C. Packers' Association are operating the steam trawler "B. C. P." in the flat-fishery out of Steveston, and the Canadian Fishing Company, Ltd., of Vancouver, are awaiting the arrival of trawl gear from England in order to fit out two or more of their steamers in the trawling game.

On the Atlantic Coast, the Maritime Fish Corporation, Ltd., are operating the steam trawler "Rayondor" out of Canso, N.S., and also a chartered Danish trawler, the "Ran," which they secured from Iceland. Leonard Fisheries, Ltd., operate the big trawler "Baleine" out of Halifax, and the National Fish Company also operate out of that port with the trawler "Triumph." The trawler "Orontes" owned by A. & R.

Loggie and landing her fish at Mulgrave, completes the fleet operating on the Atlantic.

It is reported that a wooden trawler is being built on the Atlantic coast for a Canadian concern and that trawlers are being sought for by leading salt fish houses to engage in salt Bank fishery.

The removal of the restrictions on Canadian fishing vessels landing in U.S. ports came in at an opportune time, as the big fares which are being caught by our Atlantic trawling fleet would never have been disposed of in Canada. Several of the Nova Scotia trawlers have been running their trips direct to Portland and other New England ports.

The steam trawler has undoubtedly come to stay, and it is good to note that Canada is keeping up with the times.

BIOLOGICAL BOARD BULLETINS.

We are pleased to see the Biological Board of Canada coming down to earth. Previously, the Board soared far above our common understanding and pursued its labors lost in the piscatorial clouds. Only the sweet, selected few who owned aeroplanes could keep track of the Board and its doings. But, now, the scientists have descended to our level and are giving us some of the knowledge they have gleaned.

A little book called "The Canadian Plaice," written by Dr. A. G. Huntsman from his investigations along the Atlantic Coast last year, tells us a lot about our flounder family. Dr. Huntsman has written his little book in language that the ordinary fish man can understand—which shows that the doctor is a clever man. Most scientists become so absorbed in technicalities that they cannot explain matters to anybody in simple King's English, but "The Canadian Plaice" is free from Latin names and scientific phraseology.

The report is especially valuable to fishermen inasmuch as it tells him a lot about the flat-fish, their habits, life and feeding grounds. This particular fishery is capable of great development on our Atlantic coast and there is no reason why it should not be exploited to the same extent as on our Pacific Coast and by our American cousins along the U.S. Atlantic seaboard.

Flounders, or plaice as Dr. Huntsman prefers to call them, are of our best edible fishes and the Canada Food Board's success in creating a market for the Pacific varieties should prove an incentive to our Atlantic producers. Every fish man should secure a copy of "The Canadian Plaice" from the Biological Board of Canada, Ottawa. Price 15 cents.

Other booklets covering other varieties of Canadian fish and written in a similar manner will be published by the Biological Board from time to time. More power to them!

UTILIZATION OF FISH WASTE.

We understand that the Council of Industrial and Scientific Research and under the special direction of Drs. McCallum and Ruttan, Mr. J. B. Feilding, a specialist in fish reduction and other fishery problems, has been employed in making a survey of fish waste condition in Nova Scotia and a part of Quebec.

Much startling evidence was produced as tending to show how far we are behind other countries in the conservation of many valuable products obtained from unmarketable fish waste and fish livers. With such valuable information before this Council we hope soon to look for not only technical guidance, but practical results. This is the second attempt the Government has made to get after this problem.

It is a crying pity that the fishing industry does not obtain the same technical help that agriculture does. All we want is a strong and vigorous policy as will lift our fisheries on to the same plane as agriculture.

U.S. FISH SUPPLIES.

Shortage in the supplies of salt-water fish on the Atlantic seaboard during the winter and early spring months has been largely remedied. This shortage was due to the necessary taking over of trawlers for naval purposes and the recruiting of deep-sea fishermen by the U. S. Navy. The trawler production of deep-sea fish has now been materially increased by free admission of Canadian trawlers and by new construction. Beyond this, certain State restrictions on littoral fishing have been lifted.

On every day in each week and continuously during the present season from May to December, some of the many varieties of salt fish will be available and sold in wholesale markets along the Atlantic coast at prices ranging from 4 to 6 cents per pound. In view of these conditions, the retailers in the large cities along the Atlantic coast and in the towns and cities of the interior, within reachable transportation distance from the Atlantic seaboard, will be able to sell every week day at least one variety of fish at a retail price to consumers of 10 cents per pound or under. Any retail dealer who does not conform to these conditions and offer at least one kind of fish to the public at the maximum retail price mentioned is not patriotically co-operating with the U.S. Food Administration or with his customers.

The particular variety sold by the retailer on this 10-cent basis must necessarily vary from day to day with the available supplies. Fish now available on the low-priced basis include market cod, serod cod, serod, haddock, medium hake, skate wings, grayfish, ling, flounders, shad herring, herring, whiting, croakers, butterfish (small), spotted trout (small), weak fish (small), small shad (known as jacks or skips), tinker mackerel, squid, small Boston mackerel, drum, menhaden, shark, sea robins, spots. Others will be added as the runs of the shore varieties strike on through the different Atlantic coast districts in heavier volumes.

The country was threatened with what amounted to a fish famine during the winter. The shortage arose fundamentally from the necessities of the Navy in requisitioning deep-sea trawlers and other fishing vessels and in recruiting fishermen for naval service. How important this has been may be seen from the fact that the trawler capacity supplying the New Eng-

land districts was decreased last summer from an annual capacity of approximately 60,000,000 to 35,000,000 pounds.

A substantial number of new trawlers are now on the ways and approaching completion. Owing to the action of Secretary Redfield in opening up our fishing ports to Canadian vessels, several Canadian trawlers are now fishing to our markets. There is every prospect of acquiring trawlers from the Scandinavian fisheries for use in this country. In the meantime the relaxation of State regulations that have been effected by the Food Administration should tend to increase greatly the production of the shore fisheries and its reflex will be steadily shown in the wholesale prices of fish as the season progresses.

With the approach of next winter, the U. S. Food Administration is confident the deep-sea fishing and the winter production of ground fish through the various sources indicated should be restored to normal.

CHEAP FISH OR FISH CHEAP.

"Cheap fish or fish cheap!" Sounds the same doesn't it? But there is a difference. In substituting fish for meat, Canadian housewives have become very discriminating. "Cheap fish" sounds like it. It is invariably associated with cheap dress goods, cheap furniture and cheap other things—in fact it falls under the odium of cheapness as applied to mean and worthless articles.

The Canada Food Board, in the early days of food conservation, made the pardonable mistake of advocating "cheap" fish as a substitute for beef and pork. It hadn't learned the psychology of the human, and feminine, mind with regard to the term and their efforts suffered a little in consequence. The housewife who was offered "cheap" cod, haddock, pollock, skate, whitefish or flatfish by the local fish dealer disliked the sound and incontinently passed these varieties up for the luxurious and expensive salmon and halibut. These fish, because of their high price, must necessarily be much superior in quality and food value. So she reasoned and at the same time registered a strong protest at the price charged.

The Food Board officials knowing fish, but lamentably ignorant of the workings and prejudices of the public mind, could not understand why excellent fish retailing from ten to fifteen cents per pound should be ignored in favor of varieties selling from twenty-eight to thirty-five cents. The Board had put in a great deal of hard work stimulating fish production, arranging transportation facilities and keeping the price to the consumer at a reasonable figure. Their efforts in this direction received but little encouragement.

Then someone—a lady probably—said to a Food Board official: "The women of Canada don't want cheap fish. They want fish cheap!" This terse remark opened up an entirely new point of view, and the Board realized that they would have to do some educational work and explain.

Halibut—the favorite fish of the masses—will never again rank as a low-priced fish and nothing the Food Board can do will ever bring the price down to the "fish cheap" class. The bulk of our halibut comes from the Pacific and the heavy fishing of recent years is rapidly depleting the supply. Large fishing steamers have now to catch halibut up in the Gulf of Alaska—seven and eight hundred miles from the home port

and the cost of operations is very high. Salmon is in the same category. The supply of certain varieties is becoming scarcer each year and the cost of catching puts the fish in the luxury class. Mackerel is a periodical fish—caught only at certain seasons of the year—and the vessels who venture after mackerel take big chances in catching some or none. Very often they cruise for months and catch scarce enough to pay the food bill of the crew. The demand is also greater than the supply. Shad, blue-fish, butterfish, tilefish, brook trout, bass are other varieties for which there is a greater demand than supply.

The varieties of fish in which the Food Board are interested, and which they urge the greater use of as a meat substitute, are Atlantic and Pacific codfish, haddock, flatfish, herring, whitefish, lake trout, pickerel, hake, pollock, pike and cusk. All of these are first class edible fish and fit to grace the table of an epicure. Also, through the efforts of the Board, they are in the "fish cheap" class.

Throughout the western provinces of British Columbia, Alberta, Saskatchewan and Manitoba, a plentiful supply of excellent flatfish and Pacific codfish has been secured for the citizens at prices ranging from ten to fifteen cents per pound. These fish are NOT "cheap fish." The flatfish, which includes sole, brill, plaice, witches and skate, are among the best fish taken from the sea, and in Europe are appreciated at their true worth for delicacy of flavor and nutritive qualities. Were it not for the work of the Canada Food Board in organising the supply and distribution of these flatfish throughout the Western Provinces, they would be practically unprocureable or only at prices ranging from eighteen to twenty-five cents per pound. Pacific codfish—including grey cod, red or snapper cod, and ling cod—all first class varieties can also be procured at from twelve to fifteen cents per pound. Whitefish from the Western Lakes can be purchased throughout the four Western Provinces at not more than sixteen cents per pound. Other Western lake fish—trout, pickerel, jackfish, tullibees can be procured at the same and lower prices.

In the large cities of the Eastern Provinces, Atlantic haddock, cod, pollock, hake, cusk, flounders and skate can be purchased from ten to thirteen cents per pound. In outside towns, the prices will be a cent or two more. In the Province of Ontario, whitefish, trout, lake herring, pickerel, from the Government Fisheries can be secured from the retail fish stores at prices ranging from eleven to fifteen cents per pound. Sea herring sells around ten cents per pound.

All these are instances of excellent fish which can be procured at cheap prices, yet such is the perversity of human nature that if any of these particular varieties were said to be scarce and priced at twenty-five or thirty cents per pound, the dealer would have less trouble in selling it. The instance of the man who offered a trayful of twenty-five dollar gold pieces at one dollar each and could not sell a single one is a fair example of the difficulty of selling a good article at a cheap price.

There was a time—not so very long ago—when Pacific halibut could hardly be sold at ten cents per pound. As soon as a demand arose, and the price jumped to twenty cents, the sales were enormous. Similar instances lead one to ask the question, "Does the Canadian housewife want fish cheap?"

The Canada Food Board's request that more fish be

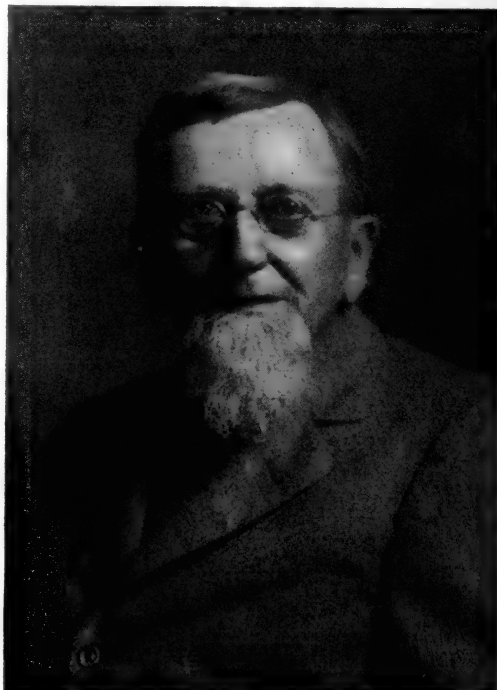
used by Canadians is not a scheme to help the fish trade. Stern war-time necessity dictated the move, and it MUST be carried out. The price for many plentiful varieties has been rigorously kept down and the fishermen and fish dealers have co-operated loyally and whole-heartedly. Compared with the prices secured for other varieties of food-stuffs nowadays, and taking into account the increasing cost of production, the fish advocated by the Canada Food Board are remarkably reasonable in price.

The fishermen and the fish trade are doing their part. It is up to the housewife to do hers and use more of it—keeping in mind when she purchases that she is not buying "cheap" fish, but fish "cheap."

OBITUARY.

Siemon Schacht, President of the Keystone Fish Co., Inc., Erie, Pennsylvania, died on June 4th, 1918, in St. Vincents Hospital, Erie, Pa., after an operation for appendicitis, made a week previous. He was in his eighty-third year.

Born on September 10th, 1935, in Hollmar, Holstein, then a part of Denmark, but now of Germany, he came to the States in 1857, locating in Virginia. After the outbreak of the Civil War, four days following the firing upon Fort Sumter, he enlisted in the Thirtieth



SIEMON SCHACHT.
President of the Keystone Fish Co., Inc.

Virginia Regiment, of the Confederate army. He served in that regiment until the end of the war, being wounded three times and finally taken prisoner, his regiment taking part in the important battle of The Wilderness, Spottsylvania Courthouse and the First Battle at Bull Run.

After the end of the war he located in the City of

Post Office Address.....

of lobsters for use fresh, but if all canning were prohibited for a period, the protection which the fishery needs would be largely afforded it, and once it were restored regulations could be feasibly enforced to prevent its depletion again.

The question has been discussed with some large operators who favor drastic action. It has been suggested,—

(1) That all lobster canning be prohibited during 1919, and every second year thereafter until the fishery is restored. It is urged that if this were done canned lobsters could be kept on the markets, and the demand for them maintained, and the canneries and fishing gear would not be allowed to become useless.

(2) That canning during 1919 be restricted to the month of June, and that it be then prohibited for a term of years. It is represented that if this were done gear and cans that may be left over this year could be used up and so would not become a dead loss.

As it is obviously desirable that a decision in the premises should be reached this month, the Minister will be obliged if you will be good enough to immediately favor the Department with a full expression of your view. If such is not received from you by the 25th instant, you will not have room for complaint regarding any action that may be taken in the matter.

I am, Sir,

Your obedient servant,

G. J. DESBARATS,

Deputy Minister of the Naval Service.

Editor, The Canadian Fisherman:

Sir,—In the May number of your valuable magazine, I find an article entitled "Major-General A. D. McRae," from the pen of William Hamar Greenwood. This article unblushingly credits the Major-General with the inauguration and ultimate success of the Troops Fish Ration, a few patronizing pats on the head going to Major Hugh A. Green, on account of his persuasive personality and prowess as a story teller in private life!

I know that you will extend the hospitality of your columns to a protest against the injustices and inaccuracies which Mr. Greenwood's article contains.

There is no phase in the career of the Overseas Fish Ration with which I am not intimately acquainted, and any story which attempts to deprive Major Green of the credit due to him in this connection, is either written in stupid ignorance of the subject or in a spirit of personal prejudice.

It would be interesting to know how Mr. Greenwood connects the Major-General with Hughie Green's initial visit to Ottawa in December, 1915, with that historic parcel of whitefish under his arm and a determination to get the fish ration on the Canadian militia menu. He worked single-handed on this job throughout the summer of 1916, and having accomplished this first stage in his mission attacked Ottawa again with a scheme for sending frozen fish overseas to the Canadians in England.

General Sir Sam Hughes detected method in the apparent fish-madness of this Scotchman from Prince Albert, and cabled General Carson, then in London, and Hughie Green was commissioned and sent over to introduce, distribute and superintend this new ration.

It became the duty of Major-General McRae—then Lieut.-Colonel and Assistant Director of Supplies and Transport—to take delivery of the fish at the camps.

The persuasive tongue of Major Green had nothing to do with the performance of his duty. It was a matter of instructions from Ottawa. It is indeed ridiculous to imagine the Major-General himself claiming anything more than a purely functionary connection with the Fish Ration, the inspection, cold storage and general organization of which constituted the duties of Major Green.

The introduction of the ration to the British War Office, the securing of an experimental order of 1,500,000 pounds, the superintendence of all phases of the fulfilment of this order, resulting in a further contract for 36,000,000 pounds of Canadian frozen fish, were all so essentially the work of Major Green that the Imperial Board of Trade who handled this War Office contract specially asked for the continued organizing services of Major Green.

The pioneering of the Fish Ration involved the surmounting of many obstacles, some of which are lengthy stories in themselves, but not the least of Major Green's difficulties was the attitude of officials who were sceptical concerning the new scheme. Among these officials was Lieut.-Colonel McRae, who, it will surprise Mr. Greenwood to know endeavored at one time to have Major Green returned to Canada. Situations of this nature were several times offset by one fortunate circumstance, that General Sir Sam Hughes himself had confidence in the Fish Ration and in Major Hughie Green, and was behind him at all times.

At the present moment Major Green is again in England on a mission of the greatest importance involving the handling of an enormous fish scheme, which will include the feeding of not only Great Britain but France, Belgium and Italy, with the frozen fish from Canada.

In view of this accurate summary of the Fish Ration story, confirmation of which can be obtained in Ottawa's official circles, it would certainly seem unnecessary and very nonsensical on Mr. Greenwood's part to apportion to Major Green merely the publicity crumbs which fall from the Major-General's table. The story of Hughie Green's work from his first expedition to Ottawa to the present stage in the history of the Ration has been told freely in the columns of the British, Canadian and American newspapers, so why should Mr. Greenwood make poor Major-General McRae feel so extremely foolish by crediting him with the "magnum opus" of a brother officer!

Thanking you, sir, for the courtesy which affords this correction the same prominence in your columns, as was given to the original inaccuracies.

I remain,

Yours faithfully,

"ONE WHO KNOWS."

Editor, The Canadian Fisherman:

Sir,—In your May issue there is an article on British Columbia Salt Herring signed by somebody calling himself "Piscatore." There are one or two points that he is in error about and evidently he did not go to headquarters for first hand information, but went on hearsay. I think it only fair to the packers of Salt Herring and to the buyers in this district to have these points corrected.

In his naming of prices he mentioned that the Albemarle Herring was sold as low as \$10.00 per barrel, and his letter would give one the information that this \$10.00 Herring was equal to the higher priced goods.

This Herring that sold for \$10.00 consisted of goods that could not possibly pass any inspection and rather than re-pack and grade as was necessary the packer of same accepted \$10.00 so as to clean up his season's work.

It is also stated that an attempt was made to control the entire B. C. pack. As it happens, I was the party who was trying to keep this pack uniform and the only controlling done was to endeavor to keep the pack in such hands and to have only such packers put up fish as would give us a good name. We had no means of inspection. There were wild rumors of high prices going, with the result that everybody who had ever heard of Herring expressed the intention of packing Scotch Cure. As I am one of the original movers of this pack in B. C., I tried to take every precaution possible to eliminate this sort of thing, as it would have meant a black eye for us by having a poor pack. The result was that those packers only who demonstrated their ability to pack according to the Scotch Cure were encouraged by me. There was no such thing as an endeavor to control the pack with the idea of a trust or price or any such thing.

Your correspondent also states that packers were advised to put up Nanaimo Herring. No encouragement was given to pack Nanaimo Herring and I state this emphatically. When Pender Harbor failed, parties wished to pack Nanaimo Herring. I advised them that provided they packed this Herring and had it all shipped by the middle of January or the end of January at the latest, the fish would be acceptable on the market. The reason of this is that the earlier run of Nanaimo Herring can be cured in the Scotch manner. Your correspondent did not mention the fact that under Nanaimo Herring are classed Chemainus and Cowichan Gap Herring, which are far superior to the real Nanaimo Herring. The fish from these two places run earlier than the Nanaimo, and the result is that there is a good quality of fish there, that provided packed early enough, will be acceptable to the market. The trouble was that the packers had on hand expensive help and barrels and gear and they determined to fill their barrels so that they could get back the cost of their labor and save overhead expenses. This is the reason that they continued packing during February and March, which was a great mistake. They were not encouraged by anyone, but packed on their own initiative for the above reasons.

Another factor that your correspondent has not taken into consideration is the fact that Herring packed early in the year and consisting of good marketable Herring took two and even three months to reach the market on account of the railway congestion as pertained on the American lines last winter. The result was that the goods arrived on the market too late for the season and then with the additional handicap of scarce cold storage facilities, there was nothing for it but to sell as cheap as possible. This, more than anything, was a factor in the drop in prices. There is a saying here, and that is: "When the market is good, all fish is good; when the market is poor, all fish is poor."

I am not trying to excuse the poor fish being packed here, but I do think that there is some protest to be registered against some assertions as made by your correspondent.

I heartily endorse the recommendation on your correspondent that Government Inspection be made com-

pulsory here. It is, however, of no use to have anyone but a thoroughly practical Scotch curer and one who has intimate knowledge of the American market requirements, and one who can adapt himself to local conditions.

I trust that you will use the good offices of your Canadian Fisheries Association to press for such an appointment at an early date.

Yours very truly,
F. F. HAYWARD.

ALLEGED LOBSTER DECLINE.

Boston, Mass., May 31, 1918.

Editor, The Canadian Fisherman:

Dear Sir, — After carefully perusing Professor Klugh's learned essay, as published in your current number, I feel he has signally failed to prove his contention that the Canadian supply of lobsters is running alarmingly low. I find the professor singularly unfortunate in choosing his points and drawing his conclusions. One peck of personal observation, you know, outweighs ten bushels of tabulated matter founded mostly on conjecture.

At the outset, Dr. Klugh says, "Considering only the total catch, we see that the lobster industry has declined three hundred per cent in twenty years." The thing is simply impossible. It is a *reductio ad absurdum* of the most glaring kind! Yet a little further on he again remarks, "Here we have a decrease of 400 per cent in the number of berried females."

No measurable quantity can be reduced beyond one hundred per cent, for that is the vanishing point, as any pupil knows. To illustrate: If you make two even bites of a cherry, the first takes fifty per cent of the whole plum. The second half completes the hundred per cent, and nothing remains. To figure on non-entities is pure moonshine!

A still more remarkable passage is where Dr. Klugh apparently sets forth the theory, originated by Prof. A. P. Knight, that the female lobster could produce eggs only when paired with the male. I say apparently, for the language is rather obscure; but he cites a case where, as an experiment, "where a goodly number of adults—male and female—was confined" in certain compartments. He says, "The results have been gratifying in the extreme, as for three years it has been found that from 40 per cent to 60 per cent of the females produced eggs." It is surprising that such a notion could be entertained by professional biologists! It is tantamount to saying that the mature pullet placed in solitary confinement all her days will never lay eggs!

But leaving academics for hard facts and realities, the lobster supply is not diminishing, if we may judge by the numbers actually brought to land. The bulletin issued by the Naval Department of Canada (printed on page 723 of your current number) upholds this view. In its report for last April it says, "The falling off was largely due to ice-conditions and unsuitable weather. With better weather during the latter part of the month, lobsters were abundant and fishing results good westward of Halifax." Think of that a moment; lobsters abundant in the very section that is fished steadily for five months and a half every year; and yet Dr. Klugh heads the list of his supposed destructive agencies with "1-Over-fishing."

A few more facts coming directly under my notice at



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"FISH IS THE ONLY READILY AVAILABLE SUBSTITUTE FOR THE MEATS SO URGENTLY REQUIRED FOR THE SOLDIERS AND CIVILIAN ALLIES OVERSEAS"—*Henry B. Thomson.*

FOOD BOARD ASSISTS CAPE BRETON FISHERMEN.

As an instance of the many matters the Fish Section of the Canada Food Board has interested itself, a communication from the Inverness, N.S., Board of Trade, can be quoted thanking the Board for their efforts with the Government in having the harbor repaired in order that fishing craft could use it and local fish production be stimulated. The letter says:—"We are most gratified to know that your appeal on our behalf has been listened to and as a consequence a grant for Inverness Harbor has been voted. Our people appreciate to the full what you have done, and, that, to very many it means a livelihood which was impossible heretofore."

TO ALL RETAIL DEALERS IN FISH.

All retail dealers in fish were required to apply for a Canada Food Board license before June 1st. Those who have neglected to secure their license can be prohibited from doing business. Also, licensees are forbidden to sell or purchase fish from persons doing business without a license. The requirements of the license are that the licensee shall not unreasonably increase the price, restrict the supply or attempt a monopoly. He shall not waste or destroy or permit preventable deterioration. Monthly reports to the Food Board may be required, and he shall keep such books and records as will enable the Canada Food Board to verify said reports. The fees are \$2 if the value sold does not exceed \$20,000 per annum and an additional \$2 for each \$20,000 or fraction thereof in excess.

FISHERIES EXHIBIT, CANADIAN NATIONAL EXHIBITION.

The Marine & Fisheries Department will not operate the Fisheries Exhibit at the Canadian National Exhibition, Toronto, this Fall. The appropriation of the Department will be used for the Fish Restaurant only, while the exhibit will be turned over to the Canada Food Board's Fish Section. A Fisheries Exhibit will be gotten up by the Board in conjunction with the Ontario Government Fisheries Department and the Canadian Fisheries Association. The Committee to handle the fish display consists of Mr. S. L. Squire, Ontario Government Fisheries, Toronto; Capt. Fred. Wallace, Canada Food Board, Ottawa, and Mr. A. H. Brittain, Vice-President, Canadian Fisheries Association, Montreal.

The Ontario Government will feature the fresh water fish of the Province and a fine display of live fish in tanks is promised. The Canadian Fisheries Association will make a generally comprehensive display of Canada's fish products in frozen, smoked, cured, pickled and canned fish from both the Pacific and Atlantic Oceans. The Food Board intends to feature the urgent necessity for a greater consumption of fish by Canadians in order that beef and pork may be solved for shipment overseas. An attractive Fish Cook Book will be distributed, and motion picture films of the fishing industry on the Atlantic, Great Lakes and Pacific will be shown daily.

CANADA FOOD BOARD'S FISH FILMS.

The fish film featuring the catching and marketing of Pacific flat-fish and cods which was taken under the direction of Capt. F. W. Wallace of the Food Board, has been completed and will be circulated throughout the Western Provinces shortly as part of the publicity propaganda to popularize these fish with Westerners. The film shows the whole operation of the fishery from the time the steam trawler leaves the dock for the Banks until the fish are sold over the retail counter. The photography is first class, and one of the most unique views is that of a bag of 10,000 lbs. of fish breaking away while being hoisted aboard. There are some thirty-five different scenes in the film and the whole forms a most interesting picture of one phase of our fishing industry.

A film to popularise Atlantic sea fish in the eastern Provinces will be prepared by the Board, and Capt. Wallace, accompanied by an expert camera man, will direct a "movie" of steam trawler and schooner dory fishing on the Atlantic Banks. This film, it is hoped, will be ready for circulation some time in July.

FOOD BOARD ISSUES NEW FISH COOK BOOK.

A beautiful little booklet, bound in an attractive colored cover, handsomely illustrated with cuts of various sea and lake fish, and containing numerous simple and revised recipes on the cooking of fish, is now being printed for the Canada Food Board. The new edition is a vast improvement over former cook books and a charge of five cents will be made for each copy. Recipes for the cooking of Pacific flat-fish, and even whale meat, is included. It is hoped that the producers and distributors will avail themselves of a large number of copies for distribution among their customers.

FISH CAMPAIGN IN TORONTO.

The Food Board conducted a sea fish campaign in Toronto during the week of June 10th. Three car loads of haddock were brought up and retailed at 10 cents per pound. The whole 75,000 lbs. was rapidly disposed of. Other sea fish at cut-rate prices—cod, mackerel, pollock, herring, soles and flounders—will be brought up during the summer and introduced to Ontario consumers.

FISH POSTER TO BE DISTRIBUTED.

The Food Board has had some of the best poster artists in Canada and the United States working on a design for an "Eat More Fish" poster. A striking design by a Canadian artist has been selected, and the poster, lithographed in several colors, will be ready for distribution at an early date.

PICKLED OOLACHONS—A FIRST CLASS FISH.

Sample pails of Pacific oolachons in pickle have been received by the Fish Section of the Canada Food Board. Both Capt. Wallace and Mr. Sawyer of the Fish Section declare them excellent and worthy of a wide market. The little fish look and taste similar to smelts and might well be called Pacific smelts. They look well in the pickle, and when cooked, after soaking overnight in running water, taste as fresh and sweet as if newly caught. These little fish are caught in great quantities on the Pacific coast and are commonly called candle-fish from the oil which is contained in them and which, when the fish is dried, is sufficient to enable them to be used as candles. In the pickled samples submitted, no excessive oiliness was noticed. Eastern dealers would do well to try oolachons.

Fish Curing

By J. J. COWIE.

Article 1.

HERRING CURING IN THE SCOTCH METHOD.

Two classes of herring are cured in what is known as the Scotch method. Full herring of various grades, that is, herring that are full of milt or roe, and matjes herring, that is, fat herring without milt or roe.

The method of curing Fulls, differs materially from that of curing matjes, in that the former are hard cured and the latter soft cured.

For the Scotch-cured herring trade it is necessary to use a barrel and half-barrel of a particular type and capacity. We shall, therefore, first describe the barrels and then the process of curing:

The Barrels.

Spruce or pine staves may be used. They are easy to shape and dress, and when properly seasoned and put together in a barrel are capital retainers of pickle.

Coopers and packers should continually bear in mind, however, that the staves of barrels for use in a trade that pays such a high price for pickled herring must be cut from the best and soundest wood, and not odds and ends of logs that cannot be otherwise used.

The staves for a "Scotch" barrel should be cut 31 inches long and 11-16 of an inch thick. Those for a Scotch half-barrel should be 24 inches long and 9-16 of an inch thick. The heading for barrels should be $\frac{3}{4}$ of an inch and for half-barrels 11-16 of an inch thick.

The inside diameter of the end trussing hoop for a barrel is 18 inches and of the bilge hoop 21 inches; intervening hoops should be in proportion thereto. For a half-barrel the inside diameter of the end trussing hoop is $14\frac{3}{4}$ inches, and of the bilge hoop 17 inches, intervening hoops in proportion. In other words, when a barrel is properly trussed and put together its outside diameter across the ends should be 18 inches, and its outside bilge diameter 21 inches. The barrel should be capable of containing 36 2-3 gallons and the half barrel 13 1-3 gallons imperial measure. The outside surface of the staves, and of the head and bottom of the barrels should be dressed or planed.

The ends of the staves at one end of the barrel should be bevelled sufficiently on the inside to allow the head to be easily taken out or put in. At the other, or bottom end, the staves should be left unbevelled.

Barrels and half-barrels should be hooped with three good wooden hoops on each quarter; but if the wooden hoops are small four should be used. Both head and bottom ends of barrels should be bound with a two-inch iron hoop, and the ends of half-barrels with a one and one-half inch iron hoop.

All knots in the staves and heading that are likely to leak should be covered with good putty on the inside of the barrels.

The Herring.

Large coarse fish should not be cured in the Scotch method. Medium sized plump fish are most acceptable to the trade and no fish larger than the maximum, named hereinafter, for "large fulls" should be so cured.

The fish should be perfectly fresh. Any "drowned" fish—herring that have been allowed to remain in the water meshed in the nets for a day or two—should be carefully separated from the fresh or live fish, as a few mixed in would spoil a whole day's packing and endanger its sale.

The fish should be gibbed and packed within about fifteen hours after being taken from the water in the summer time.

They should not be washed or soaked in water before being packed. When dories, or small boats are used for bringing herring ashore from the nets, the water that comes aboard with the herring is allowed to remain until the fish have been landed from the boat. This water should be bailed or pumped out as soon as the nets are overhauled, as it softens the fish and gives them a decayed appearance.

Herring should be handled in such a way that the scales will remain on the fish all through the process of catching and curing, in order that they may retain their silvery sheen when cured and packed.

For convenience in gibbing and grading, the fish

should be discharged from the boats into a movable box measuring about 12 feet in length, 4 to 5 feet in breadth, and 1 foot in depth. The bottom boards should be half an inch apart to allow liquid matter to pass through. The box should rest on legs standing about 20 inches high.

When the fish are being discharged into the box, salt should be scattered amongst them. This keeps them firm and makes it easier for the gibber to grasp them. This box should be kept under cover so that the fish may not be affected by the sun or weather previous to and during the process of curing.

The best type of knife for gibbing herring is one with a pointed blade about $2\frac{1}{2}$ inches long and about $\frac{1}{2}$ inch broad fixed to a handle about 4 inches long.

The foregoing remarks apply to the handling and curing of both Full and Matjes herring.

Fulls—Method of Curing.

Gutting or Gibbing.—The gills and gut should be taken clean away by entering the knife under the gill cover and cutting just below the two upper fins, leaving the roe or milt in the fish.

Grading.—During the process of gutting, the herring should be separated into three grades and called "Large Full," "Full," and "Medium Full."

Large Full.—The Large Full grade should consist of herring not more than thirteen inches, and not less than eleven and one-half inches in length, measured from the point of the head to the tip of the tail, and showing the roe or milt at the throat when the gut has been extracted.

Full.—The Full grade should consist of herring under eleven and one-half inches, but not less than ten and one-half inches in length, measured from the point of the head to the tip of the tail, and showing the milt or roe at the throat when the gut has been extracted.

Medium Full.—The Medium Full grade should consist of herring under ten and one-half inches but not less than nine and one-half inches in length, measured from the point of the head to the tip of the tail, and showing the milt or roe at the throat when the gut has been extracted.

In seasons of great scarcity it might be of advantage to make a fourth or smaller grade; but under the normal conditions it, probably, would not be worth while packing such small fish in Canada. These should consist of herring that measure less than the Medium Full Grade, but not less than nine inches. This fourth grade is known to the trade as "Matties" and may, or may not, contain milt or roe.

Rousing.—The gutted fish should be placed in a tub, or suitable box and thoroughly turned over in and mixed with salt. A separate tub or box should, if possible, be used for each grade.

Packing.—When properly roused, the herring should be lifted from the rousing tub and packed in tiers in a barrel or half-barrel. As much as possible of the rousing salt should be allowed to stick to each fish.

Packing should begin by placing a herring, back down, against the side of the barrel; two more are laid against the first one, one on each side, with their heads next the wood; another is laid against the tails of the previous two and two more against that one with their heads close to the wood, and so on until the tier has been completed when two herring should be placed on their sides over the heads of the herring in the tier, with their tails crossed and their backs next to the wood.

In packing Large Fulls into half-barrels, two herring will be found sufficient to stretch across the tier, and one herring to place over the heads of those in the tier.

The completed tier should then be evenly salted and the next tier packed transversely to the one below it, and so on, until the barrel is full, each tier being salted separately.

Gutting and packing should take place at the same time. Usually two persons continue gutting and grading the fish while one packs. Just before packing begins each barrel should be thoroughly rinsed with water to tighten it up so that when pickle begins to make, none of it may leak away.

Quantity of Salt on Tiers.—The quantity of salt that may be used in packing should vary in accordance with the size and condition of the fish. Generally, it is safe to evenly scatter as much salt on each tier as will almost cover the bellies of the fish in the tier; Large Fulls getting a little more than Fulls, and Medium Fulls a little less. Matties should get less than either.

Dating and Marking.—On the bottom of every barrel and half-barrel about to be filled, there should be marked with a lead pencil, at the time of packing, the class of fish and the date of packing as, for example:

FULL	or	MEDIUM FULL.
July 20		August 15

First Filling Up.—On the third day after packing the salt will be found to have dissolved a little and, provided the barrel is not leaky, pickle will be seen almost up to the top tier. The herring will also be found to have sunk two or three inches in the barrel.

On this day, therefore, the space left by the sinking of the herring in each barrel should be filled up to the croze with herring of the same day's pack and grade, a little salt being added to the herring used in filling up. The head should then be put in and made tight and the barrel laid on its side for the stated number of days before the final filling up and preparation for market.

Second Filling Up.—On the twelfth day, counting from the day of first packing, a bung-hole should be made in the side of the barrel, midway between the centre of the bilge and the lower hoop on the bottom end, the barrel up-ended and the head taken out. The bung should then be withdrawn and the pickle run off as far down as the bung-hole. This pickle should be retained for future use.

The space thus left should be filled up with herring of the same date of packing, and of the same grade as is shown by the marks on the bottom of the barrels.

The packing should be as before, and the barrel so filled that the top tier shall be flush with the end of the staves.

Three herrings should be laid straight on their backs across the heads of the herring of the top tier, instead of two on their sides as in the other tiers, except in the case of Large Fulls packed in half-barrels, when two over the heads of the top tier will be sufficient.

Herring used for the second filling up should be washed in weak pickle and slightly sprinkled with salt, but no salt should be put on the top tier.

The head of the barrel should then be pressed in, by the weight of a man on it, and made perfectly tight. This should cause the top tier to be slightly

The British Fisheries

3rd. Article -- The Great Trawl Fishery

By S. J. WILLIAMS
of Billingsgate, London.

The most marked characteristic of the British sea fisheries is the predominance of trawling. If not in its origin at all events in its modern development it is essentially a British method of fishing which has been copied by most of the other countries of western and northern Europe and notably by Germany, France, Holland, Belgium and Sweden. It is the method by which the greater part of the demersal or bottom fishes are captured, and owing to its success in this way it has gradually superseded the older methods of hook and line. Its predominance in the English fisheries is shown by the fact that in 1913 it was credited with the capture of no less than 94 per cent of the demersal fishes landed, 88.93 per cent being taken by first-class steam trawlers and 5 per cent by first-class sailing trawlers, while liners took only 3.75 per cent. Of a total quantity of 8,361,000 cwts. of demersal fish landed, trawlers landed 7,854,000 cwts., the value being approximately £7,015,000 of a total value of the demersal fish of £7,463,000. That was equal to 70 per cent of the aggregate value of all fish taken that year in the English fisheries, including the immense quantities of herrings. The figures for Scotland are not quite so impressive, but they show that there also trawling is by far the most important means of supplying white fish for the markets. In 1913 the quantity of trawled fish landed was 2,542,000 cwts., valued at £1,424,000 of a total for demersal fish of 3,296,000 cwts. and £1,825,000, or equal to 77 per cent and 78 per cent respectively. In Scotland 32 per cent of all fish landed, including herrings, were taken by trawl, and the value of the trawled fish was 36 per cent of the whole. Particulars are not available for Ireland, but for Great Britain the total quantity of trawled fish landed in 1913 amounted to 10,396,000 cwts. — or about 520,000 tons—which realized £8,439,000.

The Beam-Trawl and the Otter-Trawl.

The word "trawl" has been applied to very different fishing apparatus. In North America a "trawl" is a long-line, in some parts of Scotland it is the name applied to a seine-net for herrings, but strictly and properly a trawl is a bag of netting which is "trailed" or dragged along the bottom, the mouth of the net being kept open by various devices. It is a specialization of a ground-seine or truck-net and is dragged along the bottom by a boat or vessel. The mouth of the bag may be kept open in various ways. In some forms in general use in the Mediterranean the net is dragged between two boats, as the *cocchia* of Italy, the *arte del bou* of Spain, the *filets de boeuf* of France, and the *wonderkuil* of Holland. In other cases the line from one side of the mouth is attached to a spar or pole rigged out from the side of the vessel. In England up to the year 1894 the net exclusively used in deep-sea trawling was the beam-trawl, in which the mouth of the net is kept open by a beam of wood, each end of which is inserted into a socket in the upper

part of an irregularly-shaped framework of iron, termed the "trawl heads" or "irons," the lower part of which is long and flat, termed the "shoe" and slips over the ground when the net is towed. The length of the beam in the largest trawls used in 1895 was from 50 to 55 feet, and the largest sailing smacks used beams up to 50 feet. The trawl net consists of a triangular purse-shaped bag-net, approximately somewhat more than twice as long as the length of the beam, gradually narrowing from the mouth to the terminal part or "cod-end." The net consists of various parts to which distinguishing names ("back," "belly," "wings," etc.) are applied, and the size of the mesh diminishes from 3 to 4 inches towards the mouth to generally $1\frac{1}{2}$ inches, from knot to knot, in the cod-end, and the lower part of the net is arranged so as to form pockets on each side to prevent the return of the fish from the cod-end into the body of the net. The upper part of the mouth of the net is laced to the beam, but the lower part is cut away, forming a deep curve or sweep from one trawl head to the other, and to this margin the "ground-rope" is attached. This rope consisted of a stout hawser covered or "rounded" with small rope, and sometimes with wire rope inside, but it has since been variously modified, large wooden bobbins or rollers being used which enable fishing to be carried on on much rougher ground than was formerly the case. The beam trawl, then, with a mouth of 50 feet or more in width and from $3\frac{1}{2}$ to 4 feet from the bottom was towed over the ground at from $2\frac{1}{2}$ to 3 miles an hour or more, the ground-rope sweeping along the bottom and disturbing the fish lying there which were swept into the net.

A great improvement was effected in 1894 by the invention of the "otter-trawl," in which, while the net itself remained practically the same, the mouth was kept open not by a great wooden beam and trawl-heads, but by wooden boards arranged one on each side, at such an angle that when towed through the water the resistance caused them to diverge from one another on the principle of the kite. The otter-trawl had been long used by yachtsmen and even by fishermen on certain parts of the coast, but its adaptation to deep-sea trawling was due to the inventiveness of Mr. Scott, of Granton, in the Firth of Forth. Since the new net almost doubled the catches of the trawlers who employed it, it very soon wholly replaced the beam trawl for deep-sea fishing of steam vessels. The beam-trawl is, however, still in use in sailing trawlers, especially belonging to Brixham, Ramsgate and Lowestoft. In 1913 there were slightly over 1,300 English sailing trawlers, of from under 20 to 70 tons, and presumably the great majority at least of these employed the beam-trawl, the otter-trawl, which requires a steady strain, not being well adapted for sailing vessels. The net of the otter-trawl is somewhat larger than that of the beam-trawl; the head-line may be 130 or 140 feet in length, the ground rope 180 or 190 feet, and the

net itself 145 or 150 feet long. Experiments and a comparative study of the statistics show that the otter-trawl when actually fishing has a mouth not very much wider than the mouth of the beam-trawl, but it is very much higher from the ground in the centre. Hence it catches a much larger quantity of round fishes, as cod, hake, haddock, whiting, etc., than does the beam-trawl, but not much more flatfishes than the latter. The otter-trawl is towed by two warps, one attached to each otter-board, whereas the beam-trawl is worked by a single warp with bridles.

The Fishing Grounds.

From the above account of the trawl net it will be easily understood how effective it is in the capture of demersal fishes. All the fish which are swept into its formidable maw are retained, except those small enough to escape through the meshes. No other method of fishing furnishes so large a variety of species. In a single haul a score or more of different kinds may be captured. The supplies of flatfish (with the exception of halibut) are almost entirely provided by the trawl, as well as the great bulk of the round fish, as haddocks, cod, coalfish, ling, whiting, catfish, etc. The trawl net, however, can be used only in such places as have a suitable bottom—sand, shells, gravel, mud, etc.—and not where the ground is rocky and broken, though with the modification of ground-rope, etc., much rougher bottoms are now worked over than used to be the case. And whereas the beam-trawl, owing to the heavy unwieldy beam, could not be well employed in water much over 50 fathoms in depth, the otter-trawl can be used in depths over 100 fathoms, and even down to 200 fathoms. This fact has greatly extended the area of trawling and enabled new grounds to be opened up. In a former article a brief account was given of the gradual extension of trawling from coastal waters to distant areas in the North Sea. In 1891 English steam trawlers began to work the Iceland grounds, and the grounds at the Faroe Isles; later they extended their operations to the south, to the Bay of Biscay, the Portuguese coast and the coast of Morocco, and in 1905 they began to trawl within the Arctic ocean, in Barents Sea, on the so-called White Sea grounds. It may be said that all the available trawling grounds between the Tropic of Cancer and far to the north of the Arctic Circle have been opened up by English trawlers; in one and the same year the crew of a trawler were captured by the Moors at the southern limit and the crew of another, whose vessel was wrecked was rescued and succoured by the Lapps in the Arctic regions. There would appear to be no limit to the extension of trawling where the conditions are suitable and the fishing can be carried on at a profit. Along the coasts of Norway the bottom is too rough and the depths outside the territorial waters too great for this method of fishing to be generally practicable, and from some trials that have been made on the Banks of Newfoundland it would appear that trawling there is not profitable for English vessels, though French trawlers, subsidised by the State, make "salting" voyages to these grounds.

The North Sea Grounds.

Owing to the gradual extension of trawling to the distant regions referred to, and into the Atlantic to the westward, the North Sea has come to be more and more neglected. The official statistics show that in 1903 79 per cent of the total demersal fish landed by

first-class vessels (comprising all but a small proportion of the whole quantity landed) came from the North Sea, the remaining 21 per cent coming from all regions beyond the North Sea. In 1913 the percentage from the North Sea had fallen to 41 and that from regions beyond had risen to 59, so that in that year much more than half the aggregate supplies were taken from distant regions. The figures (cwt.) are as follow:

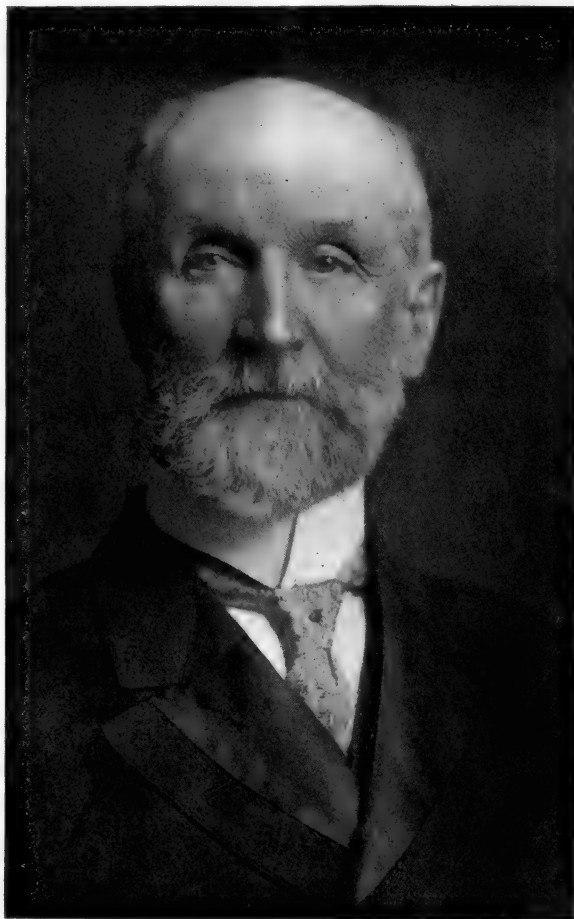
From North Sea:					
	Trawlers		Liners		
	Steam.	Sail.	Steam.	Sail.	Total.
1903 . .	4,776,081	277,530	33,388	29,980	5,116,979
1913 . .	3,030,277	266,602	24,173	11,632	3,332,684
From beyond the North Sea:					
1903 . .	1,189,057	.....	162,119	330	1,352,506
1913 . .	4,405,122	151,619	270,905	6,686	4,837,678

Thus in the ten years the supplies from the North Sea decrease by 1,784,000 cwt., the decline in the catch of steam trawlers being 1,746,000 cwt., while the supplies from other regions increased by 3,485,000 cwt., the trawlers' increase being 3,216,000 cwt. This shifting of the area of predominant trawling in recent years is an important fact and raises several questions and problems which cannot be discussed here. The fundamental thing is that it has been found more profitable to fish in the distant regions rather than on the older grounds, though the average catch (and therefore the relative abundance) of fish in the North Sea has only slightly decreased. The average catch of first-class trawlers in the North Sea per day in 1903, 1904 and 1905 was respectively 18.64, 16.39 and 16.19 cwt., in 1911, 1912 and 1913 it was respectively 16.23, 15.76 and 14.08 cwt.

The Iceland Grounds.

By far the most important region, which has so to speak taken the place of the North Sea to a large extent, is Iceland, where the abundance of fish appears to be well-nigh inexhaustible. In 1913 the quantity of demersal fish brought from Iceland to English ports was 1,867,889 cwt., of which 1,708,260 cwt. were caught by steam trawlers and 159,629 cwt. by steam liners. They comprised over a score of different species, but the bulk was made up of cod (1,065,000 cwt.) haddocks, catfish, plaice, coalfish, halibut and ling. In the year named English trawlers made 1,722 voyages to the Iceland grounds, the average duration of a voyage was 21½ days, the average quantity caught or landed was 992 cwt., or about 50 tons, and the average catch per day was 46.1 cwt., the highest for any fishing ground and more than three times the average catch in the North Sea. It would be interesting to compare since 1903 the proportion of fish taken from the different fishing regions, but space forbids. It may suffice to say that in 1913 of the demersal fish landed in England and Wales, 22.89 per cent came from the Iceland grounds, 41.49 per cent from the North Sea, 8 per cent from the Faroes, 7.64 per cent from off the south of Ireland, and 7.59 per cent from the westward of Scotland. The remaining 12 per cent were taken from the Irish Sea, the English and Bristol Channels, the West of Ireland, Rockall, the White Sea, the Bay of Biscay, and the coasts of Portugal and Morocco. It is probable that after the war is over the tendency shown above for the transference of trawling to distant grounds will be maintained and especially perhaps to Ireland, but it





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Prince Edward Island Notes

Charlottetown, P. E. I.

The dates for the opening and closing of the lobster season in this province, were originally fixed for April 26th, and June 25th, respectively—that is for the north, east and part of the south coast; for the remaining small section, there is a later season. Owing to the ice lingering longer than usual on the north side, the date of opening was changed to May 6th, and of closing until June 29th. On account of stormy weather, there has been a good deal of time lost on the north side. The catch on the whole will be lower than last year, the decrease being estimated from 25 to 50 per cent. On the north side where the fishermen have a larger field for their operations, the catch has been better than in the more restricted area of the Northumberland Strait, and it will be almost up to the average in the former section. On the east side, there will be a serious falling off, in fact, the Eastern Canneries Company of Georgetown, which represents a co-operation of packers, have had to close down one of their factories, owing to a shortage of fish. Opinions differ as to whether the fall fishing granted last year, has affected this spring's catch, but the consensus of views is that it has been a disadvantage. For example, a factory on the east coast last year, had more than an average catch, spring and fall, but this year it has done very little.

Considerable interest has been taken in the educational campaign conducted by Dr. Knight, and Mr. Perry of the Biological Board, and Mr. Andrew Halkett, Naturalist of the Fisheries Department, Ottawa. A number of meetings have been held in different centres, and the fishermen are becoming aroused to the necessity of taking steps to save an industry which threatens to go out of existence, unless the warnings of science are heeded.

Dr. Knight takes the ground that there should be no fishing in June, July, August and September, for the reason that these are the months that the females are hatching out their eggs, casting their shells, and laying the eggs for the next year. "Give the lobster these four months," he said, and the fishermen can do as they like, with the other eight. He also contends that there should be only one universal season for the whole of America. The Doctor says, he would not recommend the total prohibition of fishing, but emphasizes the fact that first of all there should be determined the annual rate of increase, and the annual catch should be regulated accordingly, over the whole coast, so as to be always below the annual production. He says, this is the principle upon which a cattle rancher operates; he does not dispose of the calves or yearlings, or even the two-year olds, or the breeding animals, but only the middle-sized or half grown. Thus, he keeps his stock up to the number which he controls as a breeder. In regard to lobsters, the "babies" and the large sized "adults," males and females, should be preserved as breeders. He said that at the eastern end of the Island, he found that, in the case of a catch by one fisherman, 600 lobsters weighed 230 pounds—a fraction over six ounces each—compared with the average weight of three pounds each, some years ago. The Doctor noted, in

his tour of the Island that the catch was good at the opening of the season, on the north side, but it dropped off and it is doubtful if it will come up again, before the season closes.

At the meetings which he addressed, he was bombarded with questions as to the life history of the lobster and other phases of the industry.

Dr. Knight addressed a meeting of the Rotary Club, in Charlottetown, a few days ago. He there gave the reasons why the hatcheries were closed, pointing out that at the hatchery in Georgetown, in this province, out of 62,500,000 eggs placed therein, last year, only 100,000 were hatched out, at a cost of \$2,500 to the Government.

Mr. C. L. Baxter, the President of the Portland Packing Company, who operate a chain of factories in this province, disagreed with the Doctor regarding hatcheries. He said that if these were run as they should be, free from politics, better results would follow. He spoke of the proposition to shut down the fishing for a season or more, pointing out that the industry in this province was worth a million dollars; that prohibition, even for one year, would mean the ruin of many small individual packers. On an average, the fishing season is only about forty-five days, making allowance for stormy weather, and if the regulations are strictly enforced, there should be good protection to the industry. The packers, on the whole, are strongly opposed to the proposed prohibition of canning. They take the ground that it would mean a loss to the packer and the fishermen, many of whom own their own gear, and which, in many cases, represents the net earnings of a lifetime. It would mean a loss to the factory hands, who receive good wages. Live lobsters, according to the proposition, will be allowed to be caught. These are most valuable as spawn producers, and if there is to be a close season, the packers argue, the large lobsters should be protected before the small. Now, that the Car Ferry is running, and there is a double train service from the Island to the Mainland daily, all the factories from Tignish to Elmira, could ship live lobsters, just as well as the factories of Nova Scotia and New Brunswick. The live lobster market is limited and there would be a glut that would be disastrous to the packer and the industry. Moreover, if the factories were closed for a year, or so, it would be nearly impossible to get fishermen, when they would be reopened, as they would become scattered or engaged in other occupations.

The dispensing with the services of 85 fish guardians or wardens of the Island, has aroused little or no comment, as yet. The small salary which these men receive and the feeling that, in the majority of cases, they are loath to lay information against their neighbors have rendered their services of doubtful value. The opinion is expressed, however, that there should be a Fisheries Police appointed, who could patrol the coasts and deal firmly and fearlessly with all violators. For some seasons, great injury has been done to the industry, by illegal packing, especially in the western part of the Island. With the laws enforced, without fear or favor, with the present close season, rigidly adhered to, it is contended that the industry may yet be maintained.

BILLINGSGATE.

London, May 18th, 1918.

To-day brought to a close one of the most unsatisfactory week's business in recent years. Prices began to give away at mid-week, and the downward tendency was more pronounced each following day until this morning a veritable slump set in, and rates fell to a ridiculous level. Several factors were contributory causes; supplies of most kinds have been of generous proportions, the weather has been exceptionally hot for the time of year, and with a slow trade a daily clearance has not been effected; the latter has resulted in the markets being over-stocked with over-day fish in secondary condition, and this has depreciated prices all round.

It is characteristic of the fish trade that when rates fall after a period of high figures they come down with a crash. Unfortunately, in their eagerness to secure supplies now that generous landings are being made, merchants at the coast have not paid sufficient attention to the weakening tendency reported from the consuming centres, and the result must have been disastrous, in a financial sense, to many.

It speaks volumes for the hold which frozen fish from Canada has now obtained in this country, that despite the abundance and cheapness of fresh fish from home waters, the Government Agent at Billingsgate reports a fair number of cases of cod, haddocks, herrings, and flatfishes going into consumption. It is to be regretted that it appears impossible to secure freight for either frozen salmon or frozen halibut, which are much wanted.

London, May 25th, 1918.

This week summer conditions have been in full force in the trade, i.e., generous supplies of most kinds, especially deep-sea fish, very hot weather, a slow trade, and prices at all manner of figures. In short, there has been little need for controlling prices, as except here and there where a buyer required a special selection of weights, or a particular kind of fish, maximum rates have scarcely ever been touched. As an indication of the market, it may be mentioned that at the leading trawling ports fish has once again been put up to auction—a method of disposing of the catches that has not been possible for two or three months. Monday was a Bank Holiday throughout England and Wales, very little business being transacted on that day, and this comparative blank day coming on top of the previous week's slump did not tend to improve matters. However, there was a change in the weather after Wednesday, when the temperature became much lower, following heavy thunderstorms, and demand expanded for really best qualities, with a corresponding stiffening in the prices. Even then however, most kinds were still quite cheap as things are counted now-a-days.

The feature of the week at Billingsgate was the arrival of eight truck loads of loose trawled fish from the Naval Authorities at a well-known East Anglian maritime centre. This fish, as before, was entrusted to the Government Agent, Peter Forge, for disposal. Mr. S. J. Williams, the Government Auctioneer attached to this well-known firm, states that this fish was in excellent condition, and included most kinds of trawled fish, such as soles, turbot, brills, plaice, red and grey mullet, haddocks (medium and chat), plaice, roker, weavers, gurnets, with a few mackerel and other kinds. The whole consignment was cleared

in two days, prices, all things considered, ruling at a very fair level throughout. The arrival of this supply of good quality fish, after a surfeit of second class stuff, did much to improve the tone of the market, and the week closed with the trade in a much more healthy condition.

As may be imagined, with the increased arrivals of fresh fish—as distinct from frozen—the inquiry for the Ministry of Food, Canadian fish has slackened considerably. It is much to be regretted, as has been so strongly pointed out in previous reports, that the quality of much of this fish has been unreliable; the result is that buyers have been only too anxious to once again purchase fish from home waters as soon as prices dropped, whereas had the frozen fish been uniformly reliable the lower rate at which it is obtainable would have proved attractive.

London, June 1st, 1918.

Monday last saw the coming into force of an amended schedule of maximum prices for fish, the Food Controller having fixed rates at a lower level in consonance with summer conditions. However, except for a few kinds, such as soles, turbot, brills and similar choice selections there has been little need for maximum rates to be enforced this week, supplies of many kinds being more than ample for all requirements. There have been two main factors contributing to this end, viz., generous supplies from the deep-sea grounds, as the waters off Iceland are known to the trade in this country, and sweltering heat; the latter, of course, always has an adverse effect on the trade, as no section of the industry is inclined to purchase more fish than it is likely to dispose of pretty easily, as such weather is not conducive to the preservation of fish in prime condition. Thus, although at some of the smaller fishing ports prices have been maintained at the full maximum, owing to the landings there being on the light side, the aggregate quantities marketed at the principal distributing centres have been comparatively generous, and rates current for many kinds have been in favor of the buyer. Another factor tending to slacken the demand for fish has been the increased quantity of butcher's meat purchaseable with each of the coupons allowed to every individual under the Government rationing scheme, while at present there is almost a super-abundance of bacon.

The great summer herring fishing off the East Coast of Scotland is now opening, and in the ordinary course plenty of herrings from waters adjacent to the British coasts may now be looked for until well on to Christmas. This, notwithstanding, there has been a fairly sustained inquiry for the Canadian frozen herrings marketed by the Ministry of Food. In many ways these fish seem to have given more satisfaction than any offered by the authorities, and proof of this is to be found in the fact that frozen herrings are scheduled at the same rate as fresh and sprinkled herrings from home waters. The growing importance of the frozen fish trade may be gauged from the fact that under the latest Fish (Prices) Order, not only are frozen salmon and frozen halibut included, but also frozen cod, frozen fresh haddocks and frozen flatfish. This being so, it behoves Canadian exporters to place only reliable quality on the market, packed in uniform weights—complaints are rife of the irregular weights contained in the cases, it being more often the exception than the rule to find the contents of a case equal to the nett weight stencilled on the outside.

The Story of Milk Powder Development in Canada

First milk powder made in Canada at Brownsville, Ont., 1904. Difficulties and Prejudices of the Producer and the Consumer being steadily overcome. Fifteen thousand farmers now turning their milk into milk powder dairy instead of into cheese as in the past. Four large milk powder plants equipped and operating and a fifth smaller but complete plant just started in Western Ontario.

The first milk powder made in Canada was made at Brownsville, Ontario, in the spring of 1904. Mr. B. A. Gould, President of Canadian Milk Products Limited, was then the sole owner of patents covering the making of milk powder by the Just or roller process, and had established the business under the name of Canadian Milk Products in what was one of the oldest and best known cheese factories in Canada. Many difficulties were encountered, not only as to the actual making of powdered milk, but also in convincing the farmers of the advisability of turning their milk into powder instead of cheese.

From 1904 until 1909 the business steadily increased in size, although it was not necessary to do anything more than enlarge and improve the Brownsville plant. It soon became evident that milk powder was destined to be the kind of milk preferred by all manufacturers who used milk in their products.



No. 1 and Original Milk Powder Plant, Brownsville, Ontario.

In the autumn of 1908 patents for making milk powder by the spray process were obtained and equipment for making by the new process installed at Brownsville. The product made by the spray process was a great improvement over the powder made by drying the milk on hot rollers inasmuch as the spray powder was completely soluble in cold water, was uncooked and retained the properties of fresh milk. At this time the company known as Canadian Milk Products was incorporated under its present name.

From the time of the adoption of the spray process, development was very rapid and in 1912 the second plant was built at Belmont, Ontario. This plant was designed to take care of and dry 100,000 pounds of milk daily and was the first plant in Canada devoted exclusively to the manufacture of milk powder.

With the building of the new plant, a new era in the

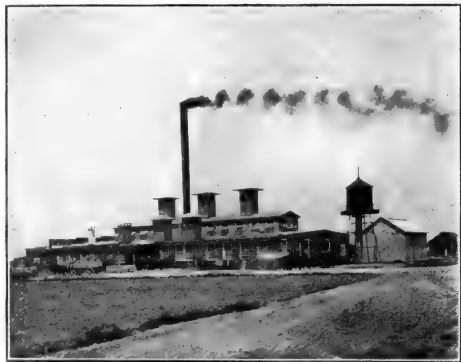
milk powder business was entered upon, because such a fine product was made that it became possible to use milk powder in the home. Practically all bakers, confectioners, chocolate and biscuit manufacturers adopted milk powder as the best milk because of its cleanliness, purity and efficiency, and it now became evident that these properties would be even more appreciated



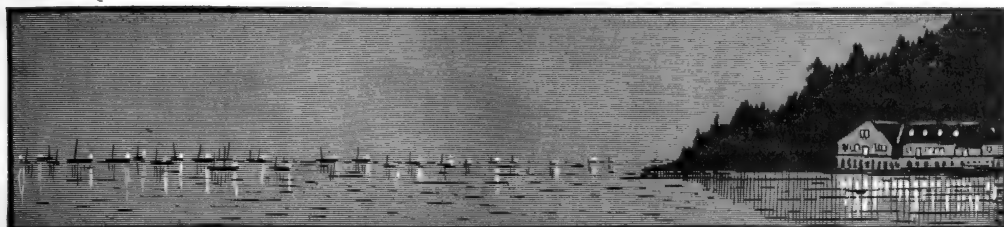
No. 2 Milk Powder Plant, Belmont, Ontario.

in the home. Thus was Klim established as a household article with a trade name.

The directors of the company were confident that powdered milk was destined to replace all forms of canned milk and become a household cooking material, but believed that it should be put upon the market in a conservative but sure manner. This policy has been followed from the beginning and the result has been a steady and growing demand for Klim from the public, together with a wide distribution.



No. 3 Milk Powder Plant, Burford, Ontario.



PACIFIC COAST SECTION

An Inquiry into whether it is Feasible and Practicable to Fix a Price for Raw Salmon to the Fishermen of British Columbia, and also for Canned Salmon to the Cannery of British Columbia, for the Season of 1918.

Vancouver.

Owing to the unbusiness-like methods in vogue in Canada and the United States during the year 1917, in connection with the purchase of Allied supplies by the Allied Governments, a situation was created that has been described by Sir William Goode, Liaison Officer of the British Ministry of Food, in the following terms:

"During the summer of 1917 the Allied Governments and even Departments of the same Allied Governments were frantically bidding against one another in the American market for supplies of all kinds, except wheat and to some extent sugar, which had already been excellently centralised by the wheat and sugar commissions. Lord Northcliffe, as head of our Special Mission to the United States, sent repeated cables urging that this should be stopped, pointing out that not only was it to the obvious disadvantage of each Ally, but that it was forcing up food prices, beyond the reach of the poorer American consumer.

"The Allies, being all exceptionally polite and well-meaning, agreed that it was foolish—and nothing happened. Then one day there came a characteristic message from Herbert Hoover to the effect that unless the Allies could 'get together' and stop cutting each other's throats he would really have to consider the advisability of stopping their supplies from America. And that shocked the Allies into action:

"To-day all the buying in America for Great Britain, France and Italy on Government or, with few exceptions, on private account is centralised in the hands of what are known as Inter-Allied Executives. The general principles followed is that all purchases on behalf of the Allies are determined by organizations sitting in London and carried out by their New York Agencies, in co-operation with the United States Food Administration, who in turn have set up a co-ordinated board for the United States Army, Navy and Allied purchases.

"The Inter-Allied Council on War Purchase and Finance, of which an American is chairman, but which sits in London, is the apex of this somewhat delicate ma-

chinery. Before any purchases are made in America the necessity of the requirements put forward by each Ally and the availability of tonnage and finance must be determined by the Inter-Ally Council. The system has solved difficulties that would have disheartened men less resolute than Lord Northcliffe and Mr. Hoover, and, without advertisement, almost unknown to the public, has effected an unparalleled economic revolution by diverting the vast imports from North America of nearly all food commodities from private hands into Government control."

Where the Blame Belongs.

The competitive bidding of the purchasing representatives of the Allies, and the inability to control Atlantic tonnage, which gave shipping pirates and speculators an opportunity to bargain in ocean space with shippers to their ruinous cost, produced a condition of affairs that enhanced the price the Allies had to pay for foodstuffs out of all proportion to their food value. For instance, canned sockeye salmon from British Columbia, which sold at about \$15 a case in Vancouver, was retailed to the consumers in the United Kingdom at from \$28 to \$30 a case, because of the poor business methods used by the representatives of the Allied Buyers in 1917.

An effort is apparently being made to assess the blame for the comic opera purchasing conditions of 1917 on the salmon cannery of British Columbia, but the blame rests wholly with those who in 1917 were entrusted with the purchase of canned salmon for the Allies. One buyer, representing the Allies, went to British Columbia, saw the leading salmon cannery and got prices on tentative contracts, but, though warned that the price of salmon would undoubtedly go up almost immediately, he did nothing, made no contracts for salmon, which he could have got at reasonable prices, and returned east only to find that the price had gone up beyond what he considered he could pay. Yet the Allies had to have the canned salmon and had to pay the price in the end. Had the buyer understood conditions and the methods of doing business in the salmon canning industry, he would have saved his principals hundreds of thousands of dollars. Such a short-sighted attempt to negotiate purchase of Canadian canned salmon apparently was in keeping with the unorganized system in vogue in 1917 on behalf of the Allies. But apparently that situation is changed now.

What the United States Army and Navy Contract Price for Canned Salmon Means.

The suggestion has been made that because of the close affiliation of the Allied Provisions Export Commission with the United States Food Administration, the former has been offered all the canned salmon it desires for export in 1918 on the basic contract price for the United States Army and Navy. It is assumed that this offer has persuaded the Allies Provisions Export Commission to believe that a similar price arrangement could be got from the cannery of British Columbia for their canned salmon. It looks very much as if the tentative arrangement with the United States Food Administration was being used as a sort of benevolent club to get the British Columbia cannery to meet the prices of the United States Army and Navy contracts. If industrial conditions in the United States and Canada, so far as the salmon fishing is concerned, were similar this method of negotiation might be justified, but as those conditions are vastly different, such a method of procedure should not be countenanced.

The United States Army and Navy contract price for canned salmon is an arbitrary price forced upon the cannery of the United States, and in 1917 was fixed only for 15 per cent of the pack of one variety and 10 per cent of the pack of another. All of the canned salmon of the 15 per cent and most of it of the 10 per cent were packed in Alaska from cheaply caught fish, taken in traps and by seines by the wholesale, at a surprisingly low cost per fish. Alaskan cannery put up large packs. In 1917 there were six million cases of salmon packed in Alaska. The fifteen per cent of the one variety upon which the United States Government fixed a price were what are known as Alaska Reds, which are not canned in Canada. The ten per cent of the other variety on which the United States Government fixed a price were Pinks or Humpbacks. The price made by the United States Government for army and navy purposes was \$1.75 a dozen, or \$7.00 per case for Alaska Reds, and \$1.50 a dozen, or \$6.00 a case, for Pinks. These prices were less than the opening prices, regularly made early in the season before the pack is put up by the United States cannery to the trade, both export and domestic, which prices were \$2.35 per dozen or \$9.40 per case for Alaska Reds. These fish were all packed in tall cans and were machine filled. This is the most economical method of packing and the least attractive. Wherever the United States Government took canned Pinks from Puget Sound,—which is contiguous to the Fraser River in British Columbia—the cannery were asked to present a cost sheet, and if the cost exceeded the cost of packing the Pinks by the Alaskan cannery then a higher price was paid by the United States Government to the Puget Sound cannery than to the Alaskan cannery.

Some Conclusions to be Drawn from the Above.

Thus it will be seen that the United States Army and Navy contract price deals only with 15 per cent of the pack of one variety of salmon in the United States and 10 per cent of the pack of another variety, and all from Alaska, on a uniform scale, and that when Pinks are taken from Puget Sound the contract price is raised; and that the cheapest and least attractive form of packing is permitted.

It is evident that price fixation on the basis of supplying the army and navy could not be accepted as a standard for fixing the prices of the rest of the United States pack in 1917 or it would have been done.

The United States salmon pack for 1917 was over 10,500,000 cases. Of this 85 per cent, or more than 8,500,000 cases, were unmolested by price fixation of the Government of the United States on the scale of the Army and Navy contract price. If the suggested fixation of prices could not work out in the United States in 1917, why assume that it is workable in Canada in 1918, where conditions are so different from those in the salmon canning industry in the United States?

It might be possible to deal with 15 per cent of the pack of the cheaper grades of Canadian canned salmon on a basis similar to the United States Army and Navy contract price, but the British Government does not use sockeye salmon for its army and navy supplies but always has used Alaska Reds. What might be done for the British Army and Navy through patriotic motives, should be considered no argument for what should be done upon business principles in connection with Sockeye Salmon, Spring Salmon, and other higher grades of salmon desired by the British consumer, but not by the British army and navy.

Is a New Principle Being Enunciated?

Is a new business principle being put forward by the Allied Provisions Export Commission? Is it to be understood that the Canadian manufacturer is to be induced by possible competition from the United States manufacturer to sell his product to the Allies at a price that will conform to the United States Army and Navy contract price? Are all manufacturers in Canada to be treated to similar competition and fixation of prices? Is there to be no longer any reasonable relation between cost of production and selling price? If this is the situation, then what happens to the chief incentive to greater production, namely a good price?

In the name of all that is patriotic, by all means hasten the day when all the resources of the Empire will be pooled to win the war, but price fixation on the basis of the United States Army and Navy contract price, which will eliminate the chief incentive to more greatly produce, will not conserve industry, but will pretty effectually crush it. The laborer is worthy of his hire, and the just steward will recognize that fact. British Columbia should not be penalized for short-sighted, ill-informed merchandising disabilities of the representatives of the Allies who sought to buy canned salmon from British Columbia in 1917, and fell victims to U.S. shipping pirates.

How to Fix a Fair Price for Canned Salmon.

Cost of production is the only stable basis upon which to estimate a fair price for canned salmon. Intelligent fixation of price depends on an accurate knowledge of costs. In the salmon canning industry, costs can be arrived at with certainty only at the close of the canning season. It is true that many sales of canned salmon of the 1918 pack have been made at the closing prices of 1917, yet it is also true that both buyers and sellers have been speculating as to costs, which is the usual way of doing business in the salmon industry, for it is the greatest gamble, outside of the wheat pit, in Canadian industrial activities. No one can tell whether the salmon will run or not. Millions of dollars are expended every season by the salmon cannery before a single salmon is caught. As a risky, speculative enterprise, there is nothing to equal the salmon fishery in Canada. Anything that would tend to make it more speculative than it is, would certainly excite capital and hinder, rather than help, increased production. Fixation of the prices of canned and raw salmon has such a tendency.

The conditions under which the salmon canning in-

dustry is operated are unusual. There is an alarming scarcity of labour, the industry at best is only a temporary employer of labour, needing fishermen but two months out of the twelve, competition from other industries is keen, where wages are high and employment more permanent. Fixing prices for raw salmon caught by the fisherman who is in two minds whether he will fish, or go logging, or ship building, is a delicate matter that may result in intensifying the scarcity of labour, and thus reducing the production of foodstuffs. If the government were the employer of labour, fixed prices might be established and maintained as in the shipyards, but where there are nearly 100 cannery all bidding for the catches of the fishermen, uniformity of price for raw salmon seems impossible of achievement. The law of supply and demand will work with more efficiency. Yet it is admitted that if before the pack is put up the price is fixed for the canned product, then a price should be fixed for the raw salmon. But with labour conditions and the general characteristics of the industry as they are, it is practically impossible to fix a price to the fisherman for his raw salmon. To do so would disorganize production efforts and jeopardize millions of dollars already expended.

Price Fixation in the United States for 1918.

Government fixation of prices in the United States has been made hitherto after the pack was up, for even in the United States it has been considered only fair to regulate the price by the cost of production. The United States Government has not named prices for canned salmon for 1918, and from all the evidence at hand does not appear to be anxious to do so. Only in Alaska have prices for raw salmon been fixed this year as last, but the price paid the salmon fishermen is double the price they got last year. No price has been made for raw salmon to the fishermen on Puget Sound or elsewhere in the United States, except in Alaska.

If the United States does not see fit to fix prices for raw salmon and for canned salmon, and the United States pack exercises price control in the markets of the world, is it not expecting too much of the Canadian cannery to take the initiative in such a formidable matter? There is no doubt that the difficulties of the situation in the United States are now apparent to the Food Administration for it has refused to fix prices for halibut handled by an industry whose labour is more easily controlled than that of the salmon canning industry.

The United States Army and Navy contract price is based on the canning of salmon in tall cans, all machine filled. But most of the packing of salmon in British Columbia in 1918 will be in half pound cans in all grades except Chums. This is due to the fact that the tin plate for canning was ordered over a year ago, and is now being delivered with the intention of putting up the pack in the style of half pound cans, which method has been forced on the cannery owing to the short supply of labour, and because their Chinese contractors are paid by the case, and get more for packing half pound cans than Tall cans. The United Kingdom as well as the United States in its Army and Navy contracts uses only Tall cans. It is to be remembered that salmon packed in half-pound cans sells for from \$1.50 to \$2.00 per case above the price of salmon packed in Tall cans, same grade of fish; and Flats 50¢ per case more than Talls, same grade of fish.

Production the First Consideration.

It is the opinion of the Canadian cannery that the

Canadian Government should consider greater production rather than regulation of prices. In estimating the cost of packing for 1918, exclusive of the price of raw salmon, the cannery of British Columbia say that it will cost at least \$6.00 to put up a case of salmon. If they have to pay more money for raw fish to the fishermen this year than they did last, and there seems every probability of that occurring, the cannery say the cost of raw fish to be put into the cans will be \$6.00 or more per case. Hence the cost of packing a case of salmon, estimating that the run of fish will be fair, will be in excess of \$12.00 per case. The raw salmon may cost the cannery \$8.00 or even up to \$10.00 per case if the run of fish is exceptionally light on the Fraser River. It is conservatively estimated that the cost of packing, exclusive of the cost of raw fish, will be \$1.50 per case more than last year, and this fact leads the cannery of British Columbia to conclude that it is useless to talk about a lower price for canned salmon in 1918 than in 1917. To their minds the price of canned salmon in 1918 must be and will be higher, no matter how much the Allied Provisions Export Commission may desire to lower it, and that price will be regulated by its relation to the cost of production.

For all of these reasons the best opinion among the British Columbia cannery is that the Canadian Government should wait and see what is done in the United States before committing itself to any fixation of prices. But even if the U.S. does fix prices for salmon, both raw and canned, those prices, however high, might not be fair to the Canadian cannery, for the prices for Puget Sound Sockeyes, Cohoes and Chums cannot be considered as a criterion on which to base prices for British Columbia salmon of these grades. The costs of production in Canada are much higher than those in the United States.

Facts Relative to Costs.

Tin plate costs the Canadian cannery \$1.15 per box more than it does the United States cannery, and to this cost is added a 7½ per cent war tax, which the United States cannery escapes, but which the Canadian cannery must pay, for the tin plate used in the salmon canning industry is imported from the United States.

Labour is harder to get and more highly paid in Canada than in the United States. The Canadian cannery for the most part catch their fish by means of gill nets. The American cannery uses traps and seines, a more economical and wholesale method of capture. Besides that, the Canadian packs are smaller than those put up by American cannery. One Alaskan cannery will put five times the pack of a British Columbia cannery.

Taxes reach the Canadian cannery on every hand. The double income tax is assessed them; the income-tax for British Columbia is 10 per cent of the profits made by the cannery.

Licenses are exacted by both the Provincial and Dominion Governments in Canada, the latter being \$1,000 a year.

Profits from canning salmon accrue to the Government of Canada as well as to the cannery. The cannery at the best can make only 11 per cent profit; the Government takes the rest. The Government is under no risk, but whenever a profit is made it takes its share.

Financing the Purchase of the Export Pack.

If Canada provides the money with which to purchase canned salmon in Canada for export on behalf of the Allied Provisions Export Commission, surely Canada should have something to say about what is a fair price to the cannery and under what conditions

the industry shall be operated. From what has already been said, it is clear that Canada should not be asked to meet the United States Army and Navy contract price. In the last resort the Government of Canada might buy the whole canned salmon pack of British Columbia and give it to the Allies. If it comes down to such a desperate method of financing in order to aid the fighting populations in Europe, Canada might buy the canned salmon pack and give in exchange for it Victory Bonds to the canners of British Columbia.

Canadian industry must pay for this war for it is the greatest collecting agency for the revenue takers of Canada. It cannot escape the tax collector, nor does it desire to do so. It wants to make money, and as it makes money, the Government takes it and the war is being paid for. But if an extraneous suggestion, inimical to the orderly prosecution of the salmon canning industry, is allowed to have right of way, the energies of industry may be affected, conditions demoralised, and unusual and vexatious burdens placed upon executives already weighted with the cares of business amid a universal atmosphere of pressure and overwork. Why shackle Canadian industry? Why single out the salmon canning industry for specific treatment with an injection of price fixation? Is there a price placed on beef? It, as well as canned salmon, is exported. Is pork limited as to its profits? Does its selling price bear any relation to the cost of production? What about wheat? Its price was fixed by inflation. Why not suggest the same for canned salmon. As to food value, a can of salmon will match any other food in the world, and it will keep longer and still be edible.

Tonnage.

Tonnage across the Atlantic may be limited to-day, but will it be limited in six months from to-day, when the ships building in the United States and Canada and elsewhere are launched? It seems fair to assume that by November and December many millions of tons of additional shipping will be afloat. Surely an excellent food like canned salmon, popular with and familiar to the people of the United Kingdom and France and Italy, will not be discarded, because in 1917 shipping pirates made it almost prohibitive in price to the consumers of the United Kingdom!

The present seems to be no time to fix prices for raw salmon unless the British Columbia canners are looking for trouble with their fishermen. The canners are prepared to give the fishermen a fair price for their raw raw fish, perhaps as much as last year, and the fishermen may accept. When there is a friendly arrangement between the canners and the fishermen, it is a courageous man who would disturb it.

In the United States the Columbia River fishermen obtained 10c a pound for their fish in 1917. To-day they are asking 16c a pound, but the canners say they cannot give it to them, and the United States Food Administration has been asked to intervene. On Puget Sound the fishermen are asking 85c each for Sockeyes, 75c for Cohoes and 50c for Chums, but the canners consider these prices too high, and again the United States Food Controller is trying to effect an agreement. Even if the Food Administration succeeds in fixing a satisfactory price for raw fish to the fishermen, that does not mean that the fishermen will fish, for they may go into other occupations.

Canada should wait and see what will happen in the United States before taking action on the matter of price fixation, and it is the opinion of the salmon

canning trade of British Columbia that nothing should be done that will interfere with the programme for greater production. If the canners and the fishermen cannot get down to a working arrangement on prices, it will be time enough for the Government to step in and regulate them. For the Government to set a price for the finished product, before accurate knowledge of the cost of production is obtained, would not meet with favour as a business proposal. The canners are prepared to do all that they can to assist the Government and the Allies in working out a just solution of all the problems that engross them, but intervention that tends to paralyze the industry should not be attempted without careful consideration.

Vancouver, B.C.,

May 6th, 1918.

To the Honorable Members of the

American-Canadian Fisheries Conference,
in Session, Vancouver, B.C.

The salmon canners of British Columbia desire to welcome the Members of your High Commission to Vancouver, and to express their satisfaction that the Governments of the United States and Canada, are making serious effort to co-operate in devising measures in relation to the Fisheries in waters contiguous to both countries, on the Atlantic and Pacific Coasts, which shall, not only materially assist in the successful prosecution of the Fishing and Canning industries, and the perpetuation and protection of the supplies of fish for the food of the public, but also; they hope, to remove for all time the causes for dissention and irritation which have hitherto unfortunately existed.

They submit, that the most important subject to be considered by your Hon. Commissions, at this time, is how best to perpetuate and conserve the supplies of sockeye and other salmon, for canning purposes, now so seriously threatened with entire depletion.

The necessity for concerted action to prevent such a calamity as entire depletion, with its attendant financial disaster, is clearly recognized by the Canners and Fishermen engaged in these industries on Puget Sound and the Fraser River, but so far, no basis for agreement, as to how best attain the desired result has been arrived at by those interested.

The sockeyes and other salmon are bred in the Fraser River, entirely in Canadian territory; and on their way back from the Pacific to their spawning grounds in the Fraser River, pass up the Straits or Foca and through Puget Sound, where they are captured in unlimited numbers of traps and purse seines; the latter of which meet the incoming schools outside Cape Flattery, and follow them up to Point Roberts on the International Boundary Line. Each year has seen the number of purse seines increased in numbers, size and effectiveness, and the use of more powerful motor boats which not only draw the nets, but having greater advantage in pursuing the seines much more quickly, practically doubles their capacity. In this connection, it must be noted, that on the Fraser River and vicinity, no such appliances are permitted by the Canadian Government to be used, but fishing is entirely restricted to gill nets, which have been reduced in depth of mesh, and only nets 150 fathoms long are allowed to be fished. It is the present effectiveness of the gear now employed on Puget Sound, and being steadily developed, which has been, and is, responsible for the great preponderance of the Puget Sound packs over those on the Fraser River, and has destroyed the parity

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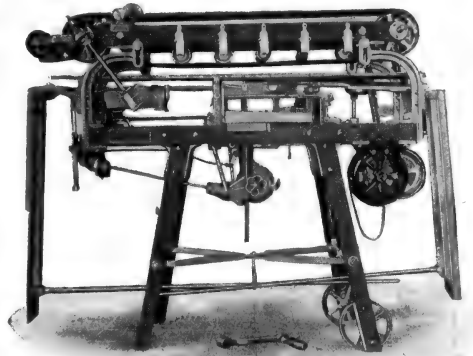
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which existed between the two districts, during the earlier years of the industry.

The Canadian Government has steadily refused to permit the use of the modern methods of capture employed on Puget Sound, in order to protect and perpetuate the supply of salmon, which it rightly deemed to be the truest economy; but the results have been, that such a policy was effected, entirely at the expense of the Fraser River operators, and inured to the advantage of those on Puget Sound.

The totals of the respective Sockeye packs, in the "Big Years" of 1909, 1913 and 1917 clearly prove this contention:—

	Combined Packs.	Puget Sound.	Fraser River.
1909	1,558,945 es.	1,016,697 es.	542,248 es.
1913	2,350,324 es.	1,665,728 es.	684,596 es.
1917	535,152 es.	411,538 es.	123,614 es.

The relative percentages of the combined sockeye packs were:

	Puget Sound	Fraser River.
1909	65.23%	34.77%
1913	70.87%	29.13%
1917	76.91%	23.09%

Or.

Of the packs of all grades of salmon packed on Puget Sound and the Fraser River during the same years, the ratios would be:—

	Puget Sound.	Fraser River.
1909	1,582,010 es. or 61.58%	607,743 es. or 38.42%
1913	2,553,843 es. or 69.37%	782,429 es. or 30.63%
1917	1,921,554 es. or 74.12%	497,280 es. or 25.88%

The Canadian Canneries do not object to their competitors on Puget Sound, by reason of the advantages in respect to the location of their fisheries, securing a share of the salmon; but they contend that they, as subjects of Canada, which provides the whole supply, are justly entitled to a reasonable proportion of the salmon, and that, as concessions, to perpetuate that supply are vitally necessary, those who have received the major benefits, should contribute a relative share of such concessions.

They therefore respectfully pray that your Hon. Commissioners in dealing with the salmon fisheries of the Fraser River will give due consideration to the following suggestions:

1.—That all matters pertaining to the salmon fisheries in Canadian and American waters shall be treated strictly on their merits, and decisions shall not be influenced by any other considerations.

2.—That as a primary basis for a treaty between the United States and Canada, in respect to the salmon fisheries of the Fraser River, an arrangement be decided upon, **in advance**, recognizing the principle of fair propositions of the supply of salmon being defined and allotted to the cannery on Puget Sound and on the Fraser River respectively.

3.—That prompt and strong action shall be taken by the authorities in both countries towards:

(a) Restoring the supply of salmon in the Fraser River to its former dimensions.

(b) Providing for the maintenance of such supply when the Fraser River has been restocked.

4.—That the excessive fishing which has occurred in American waters, shall be adequately restricted, by permitting purse seines to be operated, under license of the United States, only from a line drawn from Beachy Head, Vancouver Island to Observatory Point, in the State of Washington or 123 deg. 40' West Long.—Easterly to a line drawn from Gonzales Point, Vancouver Island, to the westerly end of Deception Pass, on the northwest point of Whidby Island, State of Washington.

These boundaries would afford a reasonable area for the operations of purse seines, and abolish the present practice of meeting the salmon outside Cape Flattery, and persistently following the schools up to the traps on the American side, and to the Boundary Line at Point Roberts.

5.—Recognizing the desirability also of restricting the days during which salmon fishing shall be permitted on both sides of the line, preferably by making the opening day for fishing later than July 1st, as at present, and maintaining weekly close times of not less than 36 hours, on both sides of the line—the Canadian cannery would be prepared to adopt any decision of your Hon. Commission, provided, the **same dates** for opening and closing operations shall apply to fishing in British Columbia as in Puget Sound waters.

Our fishermen are restricted to gill net fishing, and to the use of gill nets, reduced in length and depth. (as all practical men will admit) to the minimum of effectiveness, therefore it will be only just and fair that regulations and restrictions in respect to gear, such as gill nets, drag seines, purse seines and traps shall be ordained by the United States authorities, or allowances made in such measure to place the Fraser River fishermen and cannery on a parity with their competitors on Puget Sound.

It was suggested that our fishermen shall not begin fishing for sockeyes till August 5th, or five days later than on Puget Sound, after the close season commencing July 20th.

This arrangement would mean that the canneries on the Fraser River must close down entirely, as no fishermen could make a living if he could not commence before August 5th.

As shown in the percentage figures, above presented, Puget Sound cannery now secure 75 per cent. of the entire catches of all grades of salmon. To ask our fishermen and cannery to reduce their 25 per cent. share by one half, would simply mean that they would be put out of business, and for what?

If, as a result of this investigation, the supply of salmon is restored, who will benefit thereby?

If the Puget Sound methods of capture are not restricted and regulated, it is clear as daylight, they will increase their proportion of the catch, and so far as our people are concerned, any such increase in supply will entirely cease to benefit them.

The fishermen and cannery on the Fraser River, depend chiefly for their reward upon the sockeye run; and to a much greater extent than their competitors on Puget Sound, whose business might not be so disastrously affected by the extermination of the sockeye, but our people are as anxious as any one, that the supply of all other grades of salmon shall be conserved.

Provided the United States Government makes the reasonable concessions before outlined, our people are willing that salmon fishing above New Westminster Bridge shall be prohibited, though such a restriction will entail hardship on a large number of up-river



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FOR FISHERMEN

fishermen; and that the number of Fraser River gill net licenses issued shall be restricted.

And further, that our Indians shall be prohibited from taking salmon anywhere on the Upper reaches of the Fraser River and its tributaries or lakes frequented by salmon, and that they shall be otherwise recompensed and provided for by the Canadian Government, in return for the loss of their ancient rights.

The spawning beds and mouths of streams frequented by salmon abound with trout, chub and other predatory fish which destroy large quantities of ova and fry. The Cannermen heartily endorse the desire of the fishermen, that permission to catch and market these predatory fish be conceded by the Canadian Government.

And that more strenuous effects be made to exterminate the herds of hair seals and sea lions, which prey upon the salmon and destroy vast numbers.

In conclusion they desire to emphasize their opinions that no effective measures for the rehabilitation of the sockeye supply in the Fraser River are possible, unless the United States authorities, controlling operations on Puget Sound and in the Straits, are prepared to adopt methods and regulations which will materially aid in securing the passage of salmon to their spawning grounds; and that should the supply, happily, be augmented as a result of such economic changes in administration—adequate precautions shall be provided to prevent a recurrence of the dangerous conditions now existing, and which threaten the canning and fishing industries on both sides of the line.

All which is respectfully submitted.

B. C. SALMON CANNERS' ASSOCIATION.
Per Secretary.

Statement made by JOHN P. BABCOCK, Assistant to Commissioner of Fisheries for British Columbia, at Vancouver Meeting of the American-Canadian Fishery Conference.

The outstanding features in the salmon fishery of the Fraser River District, in my judgment, are the depletion of the runs, and the potentialities of the watershed. Because depletion has been shown and is universally admitted, I shall confine attention to the latter.

The Watershed:

The watershed of the Fraser River contains a greater area of tributary fresh water lakes than are found in any other on the coast. The Fraser drains the major portion of the south-eastern section of the Province of British Columbia. Three of the largest lakes on the Pacific slope and five others of large area contribute their waters to the Fraser, and afford spawning areas and rearing waters for a countless number of sockeye salmon. No other known watershed affords such an extended spawning area. No other watershed has produced, in a single year, such vast numbers of sockeye. The great runs of 1901, 1905, 1909 and 1913 demonstrate the harvest that watershed will afford when abundantly seeded. The great catches of those years—ranging from 1,572,000 to 2,384,000 cases demonstrates the number of fish that may safely be taken without injury to the runs of the future, because, notwithstanding, such great catches, every section of the spawning area of the watershed was shown

to have been abundantly seeded in 1901, 1905 and 1909, and there is evidence to show that its spawning area would have been as abundantly seeded in 1913 but for an accident.

Since 1901, I have made a study of conditions on the fishing and spawning grounds of the Fraser River. I first inspected its spawning area in 1901. As the agent of the Provincial Government I have inspected that watershed during the spawning period every year since, with the exception of the year 1910 and 1911. The annual publication of the Provincial Government contains my yearly reports.

As the result of my inspections, I feel fully justified in submitting that the major portion of the great runs of 1905, 1909 and 1913, were the product of the sockeye that spawned in that section of the watershed of the Fraser that lies north of the great canyon in the coast ranges, commonly termed "the Fraser River Canyon." And that the major portion of the runs in the alternate years—the lean year—were the product of the sockeye that spawned in that section of the watershed that lies to the south and west of the Fraser River Canyon. In the discussion of this question the former is here termed the Upper Section of the Fraser River Watershed, and the latter, the Lower Section of the Fraser Watershed. In my judgment, the great runs of the big years have very largely consisted of fish propagated in the Upper Section; plus the normal yearly product of the Lower Section. The runs in the alternate, or lean years, have been the normal yearly product of the Lower Section plus the small numbers produced in the lean years from the beds of the Upper Section.

In the big years 1901, 1905, and 1909 every spawning bed in the Upper Section was crowded with sockeye. They were found there in incredible numbers. The beds of that section in 1913 showed an alarming decrease. While over four million of sockeye were recorded as entering Quesnel Lake in 1909, but five hundred and fifty thousand were shown to have entered that lake in 1913, and less than twenty-eight thousand in 1917. Furthermore similar conditions were shown to have existed in all the lake districts of the Upper Section in 1913 and 1917. The number of sockeye that reached the beds of the Upper Section in 1917 were shown to have been very much less than in 1913, and little, if any, more numerous than in some recent lean years. The records of the Upper Section in 1913 and again in 1917, demonstrate that the conditions which produced the big run in 1905, 1909 and 1913, no longer exist, that the big year run has been destroyed and that hereafter the runs of those years must be classed with the runs in the lean years. In the alternate—the lean—years the spawning beds of the Upper Section were but sparingly seeded up to 1906 and have not been as well seeded since. Gradually, with one or two exceptional years, the number of sockeye which reached the Upper Section in the lean years has notably declined. Every district in the Upper Section shows a decline. Hatcheries located at Shuswap and Seton Lakes, the only hatcheries in the Upper Section, have been closed because a sufficient number of sockeye have not reached those lakes in recent years to afford a supply of eggs. No eggs were, or could have been collected at either of those lakes in the last three years.

Passing to the spawning area of the Lower Section of the Fraser, the record discloses that from 1901 to 1917 there was no pronounced increase in the run

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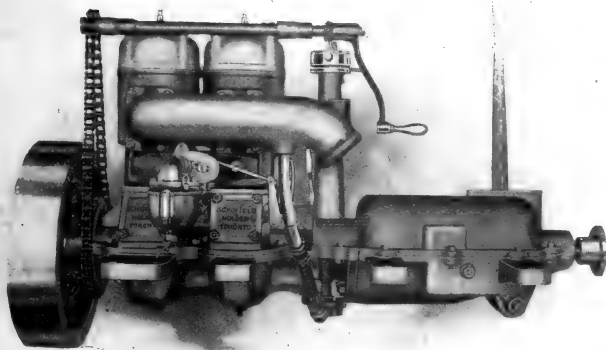
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in the big years over the run of the lean years. That there has been as many fish on those beds in the lean years as in the big years. This is especially true of the runs to Lillooet and Harrison Lakes, the two great lakes of the Lower Section. The runs to this section have shown a steady decline. There were less sockeye in this section in 1917 than in any former year, big or lean—on record, and less eggs were secured for the hatcheries.

Because the bulk of the run of the big years issues from the Upper Section of the Watershed, and because there has been no noticeable increase in the number of sockeye on the beds of the Lower Section in those years, it appears that the condition which originally brought about the phenomenon of the big run and the three following small runs of sockeye to the Fraser was of such a character as to have affected only the run to the Upper Section and yet did not affect the run to the Lower Section.

Because the run to every lake district of the Upper Section was equally affected we are warranted in assuming that the point of obstruction was located below the junction of the Thompson and the Fraser Rivers.

Because the run was affected for three years only, it is assumed that the barrier, or blockade, was of such a character as to have affected the run in those years only and did not affect the run in the fourth year, that in the fourth year it had worn away or been removed by high water to an extent that permitted the run of that year to reach the spawning beds of the Upper Section.

The channel of the Fraser through the canyon extending from Yale to Ciseo is exceedingly narrow at many points. Towering cliffs of rock line its banks. A rockslide such as the one that occurred in that canyon, at Hell's Gate in 1913, could easily have produced a similar result at an earlier period of time, and just as effectively cut off the run for a number of years as the slide of 1913 would have done had it not been removed by the Dominion Government in 1914. Great as was the slide of 1913, it did not cut off all of the early run of sockeye of that year. Owing to extreme high water in July, numbers of sockeye were enabled to pass through, as was demonstrated by the fish reaching Quesnel and Chilco Lakes.

Assuming then that we have here a reasonable theory of the origin and the nature of the barrier that cut off the sockeye from the spawning area of the Upper Section of the Fraser which resulted in the phenomenon of the one big year and three lean year runs of sockeye, let us speculate as to the extent of its effect upon the runs of the three lean years. The barrier may have been sufficient to have cut off a portion of the run only, or it may have cut off the entire run. If a portion of the run at extreme high or low water was enabled to pass, that portion would have furnished the nucleus—the seed—for a run four years later.

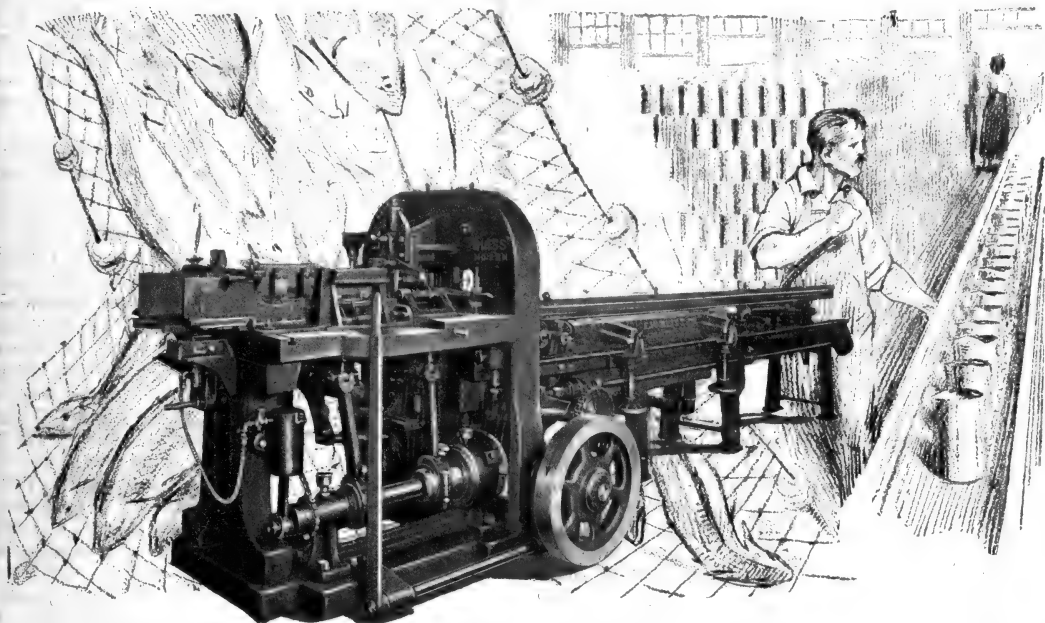
If we assume that the entire run was cut off from the Upper Section for one or all of the three years of the cycle, we must furnish a plausible, a workable, theory to account for the restoration of the runs in the three lean years. That is not difficult. Dr. Gilbert, by his study of the growth and structure of the scales of the sockeye, has demonstrated that while the race of sockeye that frequent the Fraser are predominately four year old fish, there is in the run of every year, three year old, four year old and five year old fish.

He demonstrated "clearly that in the Fraser basin a high percentage of four year fish accompanied a large pack or stated conversely, a small pack is occasioned mainly by a deficiency in four year old fish." x x. B. C. Fishermen Report 1915, pp. 22 and 30.

In four runs he found an average of 82 per cent of four year old fish. In the catch of 1912 he found 21.5 per cent of three year old fish, and 10 per cent of five year old fish. The presence of from 54 to 99 per cent of four year old fish in five consecutive runs and plus per cent to 46 per cent of five year old fish in the same runs, establishes the fact that from each year's spawning a proportion of five year old fish are produced. We have here evidence of the existence in the run of the year that was not obstructed the nucleus for a future run. The period taken to build up a run from such a scant seeding must have been an extended one. Had this constituted the only seed that reached the beds in the three lean years the run following the big year should have been more readily built up than the run in the two following years. In fact, the record of the pack demonstrates that the catch in the year following the big run has always been greater than in the two following years.

We are not, however, confined to the conclusion that if the run for three years, was entirely destroyed, that the run in the lean years was built up entirely from the spawning of five year old fish. Granting the premises of the home stream theorists that salmon bred in a stream return to that stream to spawn because the weight of evidence favors their contention—there is abundant evidence on this coast and in New Zealand, where the Pacific salmon have been established, to show that some of the salmon bred in one stream have, on reaching maturity, entered a different stream to spawn. Further, it has not been shown or claimed that all the fish bred in a watershed return to the identical tributary of that watershed in which they were propagated. There is sufficient evidence to warrant the conclusion, that some salmon propagated in the Lower Section of the Fraser have entered the Upper Section and spawned there. We have, therefore, three strings to our bow to account for the existence of the runs of the lean years. (1) The escapes at high or low stages of water during the original blockade; (2) The overlapping five year old fish bred in the Upper Section by the run that did survive, and (3) the fish bred in the Lower Section that passed to the Upper Section and spawned there.

The building up of a run to the Upper Section of the Fraser by any or all of the measures here indicated would of necessity, have taken a long period of time. We cannot estimate it but we are not compelled to place it in the dark ages or even two or three centuries ago. We can, however, postulate that, during that period the Indians of the Upper Section, and in the Fraser Canyon, were catching such fish as they could secure up to the limit of their demands, and were in consequence interfering with a more rapid development of a run. The records of Simon Fraser, the discoverer and original navigator of the river that bears his name, written more than a century ago—1806-11—establishes the fact that there was in those years a big run every fourth year and a light run in each of the three succeeding years in the Upper Fraser. He also furnishes evidence to show that in some of the lean years the Indians at Stuart and Fraser Lakes could not supply his post with all the



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salmon he required and that an additional supply was obtained from the post at Kamloops, where the run appears to have been larger or the demand less. Indicating at that time the Indians could not obtain from Stuart and Fraser Lakes all the fish they desired.

This matter has been treated at length that it may be appreciated that the period of time necessary to restore a depleted run to a run of commercial importance is under natural conditions a long one, and because it has been stated that the failure of nature to have equalized the runs of sockeye in the Fraser demonstrated that the runs in the lean years could not be developed to the proportions of a big year run. I submit that there is no force in that contention. The runs in the lean years will equal the runs of former big years four years following as abundant seeding as the beds received in either 1901, 1905 and 1909. It is only a matter of seeding the spawning area abundantly.

Mr. Secretary Redfield requested that in advocating restrictive measures that I should consider the present demand for foods, and that he would like me to express my views on the subject. In reply, let me submit. The average pack of Fraser River Sockeye in Washington and British Columbia in the last three lean years totalled but 267,000 cases. The reports from the spawning grounds of the Fraser in these years give no promise that the runs in the following three lean years will equal that average. If that be true, the best we can expect is 267,000 cases per year. Is the food shortage so serious as to demand that the few remaining sockeye of the Fraser run be drawn upon to supply that number of cases?

Permit me, gentlemen, to draw my remarks to a conclusion by quoting from the very able statement furnished you by my mentor, Dr. Gilbert.

"The Fraser River presents unexampled opportunities for productiveness and wealth. The people need the enormous supplies of highly valuable food which the river is able to produce annually. It should not be permitted to remain at its present low rate of production. The people need the food. They will come to need it in future years even more sorely than they do at the present. No private interests should be permitted to stand in the way of restoring this producer of food to the public.

"If the Fraser River were a private monopoly, to be henceforth wisely handled, there can be no doubt it would now be promptly closed to commercial fishing for a term of years, and the entire run—now so sadly dwindled—dedicated to purposes of propagation. This should be done without further delay for at least one cycle of four years, and the results carefully noted by a continued study of the spawning beds. If the river were closed to fishing for one cycle of four years, we could know fairly well in advance what the result was to be, and could then either open the river and sound to restricted fishing, if conditions should warrant, or if necessary close it for a future period of four years. This is the only method to restore the sockeye run with any promptness and with any certainty of success."

"So great has been the reduction of the runs, we cannot predict with any optimism what would be the result of less drastic measures. If the amount of fishing gear in use be limited and the weekly closed season be extended, undoubtedly a somewhat larger proportion of fish would reach the beds. But it must

be borne in mind that it is not the proportion of a given run which spells success, but the actual numbers of spawners. The whole of a sadly depleted run may be all too few to produce the desired results. It is greatly to be feared that any restriction in the present case which would be so moderate as still to leave it profitable for cannerymen to operate in the face of such reduced runs, can accomplish little or nothing towards the restocking of the river.

"The only wise course—the only adequate remedy—is to close the river for a term of years by concurrent action of the two Governments."

THE SALMON SEASON IS HERE.

On June 20th the Northern Canneries will begin operations, as the season opens on that date, and everything is in readiness to begin the season. There are three new canneries to start in this year, in the North. Two in the Naas River district, and one on Rivers Inlet. Those in the Naas River district are the Western Salmon Packing Co., under the management of Lieut.-Col. J. M. McMillan, and the Portland Fisheries, Limited. The last named one is owned by R. V. Winch & Co. On Rivers Inlet, the new McTavish Cannery will begin running this season. At the Butedale plant of the Western Packers, Ltd., the Cannery has been enlarged, and better facilities for the handling of the pack will be had, by the many improvements which have been made.

This year, as never before, the business is more a matter of speculation among all the cannerymen, as the prices for everything in connection with the canning industry has risen to the top notch. This includes labor of all kinds, and with a shortage of the best help, many cannery foremen have been hard pushed to get satisfactory help for their several canneries.

Another matter that has bothered the cannerymen is the fact that there has been no definite statement of the attitude the Canada Food Board will take as regards the price of canned salmon.

The Fraser River season opens on July 1st. The number of canneries operating on the Fraser will be greatly reduced this year owing to its being an off year. The recent fire also put two canneries out of commission, and this will make a difference, although the Cliff-Lowman interests will operate the Scottish Canadian cannery, and according to Mr. Cliff, this will take care of their pack in good shape. Mr. Cliff has just returned from their Jarvis Inlet station, and reports things in good shape for the fall season.

The Gosse-Millerd Packing Co., Ltd., are still unsettled as to their Fraser River plans, according to Mr. Francis Millerd. But they have been making extensive alterations to their Northern plants. At East Bella Bella, they have built a 60 x 100, three storey warehouse for the storage of cans and canned salmon, and built new houses for employees. They have also added to their cold storage facilities by building a new sharp freezer, and more storage room. They are also planning for the canning and salting of herring on an extensive scale during the herring season. At their Sunny side plant, on the Skeena, they have made new additions and alterations. This concern is up to the minute at all times, and have everything up to date in all their plants. This is accounted for partly by the fact that a number of the company is in charge of each plant, and they are on the job at all seasons of the year. Mr. "Bob" Gosse is in charge of the Vancouver

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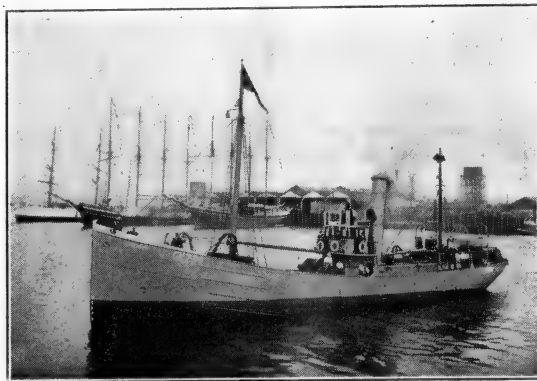
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THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
- OF FISH PRODUCTS -

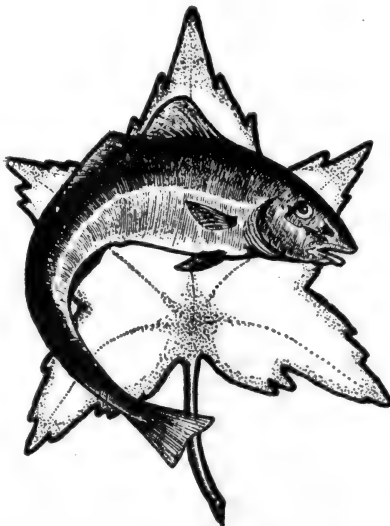
F. WILLIAM WALLACE
EDITOR

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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, JULY, 1918

No. 7

HALIFAX CONVENTION, CANADIAN FISHERIES ASSOCIATION, AUGUST 6th, 7th and 8th.

The Canadian Fisheries Association Convention at Halifax on August 6th, 7th and 8th, is going to be a momentous gathering. Members of the Association from all parts of Canada have signified their intention of being present; prominent officials and scientists from both sides of the line will be guests of the Association and the programme includes papers by the foremost authorities on the subjects they deal with.

Acceptances have been received from the following guests: — H. B. Thomson, Chairman, Canada Food Board; Kenneth Fowler, Fish Division, U. S. Food Administration; Hon. W. S. Fielding, M.P., Chairman, Standing Committee on Fisheries; J. G. Desbarats, Deputy Minister of Fisheries; W. A. Found, Superintendent of Fisheries; C. A. Hayes, General Manager, Canadian Government Railways; Dr. A. B. McCallum, Chairman, Advisory Council Scientific Research; Dr. E. E. Prince, Dominion Commissioner of Fisheries; Allan Donnel, Commission of Conservation; Capt. F. W. Wallace, and E. O. Sawyer, Fish Section, Canada Food Board; Professor R. F. Ruttan, Member Advisory Board, Council Scientific Research.

Dr. A. P. Knight, Professor of Biology, Kingston University; H. H. Melanson, General Passenger Agent, Canadian Government Railways; S. L. Squires, Ontario Government Fisheries. Numerous other prominent gentlemen have been invited but their acceptances have not arrived on the date of going to Press. A large delegation will be going from Toronto and Montreal and a representative of the Newfoundland Government will be present.

The Fisheries Committee of the Halifax Board of Trade have planned a splendid programme of entertainment for the visitors and their ladies and there is no doubt whatever that the Convention is going to be instructive and enjoyable. The programme, up to the date of writing, is as published herewith. Other papers will be included later upon hearing from the parties invited to deliver same.

Tuesday, August 6th.

9.00 a.m.—Registration Office (Halifax Hotel) opens, and will remain open during the entire Convention.

10.30 a.m.—First Business Session.

Welcoming Addresses.
Reports of Treasurer.
Reports of Committees.

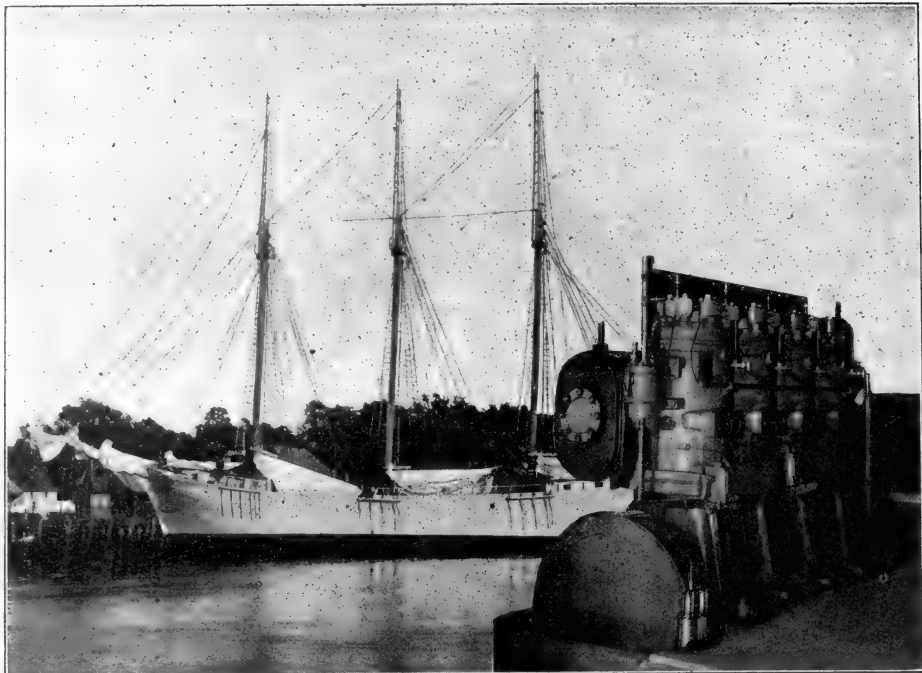
3.00 p.m.—First General Session:

President's Address.
H. B. Thomson, Chairman Canada Food Board, on
"Canadian Fish and the War."

The main subject for discussion at this session will be "Canadian Fish Resources," and papers will be presented on this subject by Dr. A. G. Huntsman, Professor of Biology, Toronto University, dealing with the resources of the Atlantic;

Dr. C. H. Gilbert, of Leland-Stanford University, San Francisco, California, dealing mainly with the resources of the Pacific;

Dr. E. E. Prince, Dominion Commissioner of Fisheries, dealing with the fisheries of the inland waters;



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OUR FISHING INDUSTRY A SOURCE OF NATIONAL WEALTH.

Our faith in the value of our fisheries to Canada is still further strengthened by the opinions of outside observers. Embodied in a recent report of the Guaranty Trust Company of New York on Canada's financial position after four years of war, is the following relative to our fishing industry.

"An obvious instance and of particular interest to the United States is the fish industry. One-fourth of the world's supply of fish is produced from the waters of the United States and Canada. The value of the Canadian yearly catch is \$40,000,000 as compared with \$150,000,000 for the United States, \$52,000,000 for Great Britain, \$50,000,000 for Japan, \$50,000,000 for Russia and \$33,000,000 for France. Germany's annual production is valued at \$12,000,000 and that of Norway, Sweden and Denmark, at \$25,000,000. The Canadian yearly catch before the war was 112½ pounds per person, of which only 29 pounds per person was consumed by the Canadians, while 83½ pounds per person was exported, chiefly to Great Britain and the United States. In Great Britain the consumption was 59 pounds per person per year. Since the war began there has been an increase in the demand both in this country and Great Britain and Canada is awakening to the possibilities of wealth in her unlimited supplies. The suggestion is made that the Government turn to the Canadian fisheries as a debt paying source and under the direction of a Dominion Fish Committee plans are being made to exploit both the Atlantic and Pacific coasts and the lakes in Alberta, Saskatchewan, and Manitoba. New methods of fishing are being promoted to the end that cargo space be fully utilized by taking in all varieties rather than by limiting the catch to the higher priced fish."

The report also mentions the movements now taking place in Canada to develop our natural resources and, insofar as the fisheries are concerned, the coming Convention of the Canadian Fisheries Association is an indication that we are proceeding along the lines mentioned in the following paragraph:

"Canada is much in the position of many other countries which never realized the value of their natural resources until a world-wide shortage of raw materials and manufactured articles brought them into international trade, created new commercial routes to their very shores, and inspired them with golden visions of the future.

"In the hope of retaining just as large a share of this newly acquired business, as foresight, energy and adjustability can make possible, Canada desires not only to enlarge and improve enterprises upon which she has recently embarked, but also to develop more efficiently certain natural advantages which war conditions and the prospect of an extended period of competition have emphasized. Various organizations are being formed to work out suitable plans in the numerous instances where Canadians have neglected opportunities in the past."

THE PACIFIC FISHERMAN'S WAGES.

We reprint herewith—headlines and all—a paragraph regarding the fishermen of the Pacific Coast which appeared in the Halifax Herald of July 1st. This magazine had occasion some time ago to print

a few facts regarding the deep-sea fishermen of the Pacific and was assailed with abuse by these modern pirates. A gentlemanly objection to our editorial was written by Mr. Gill, President of the Deep-Sea Fishermen's Union, and we respect him for it. Unfortunately, the whole Union is not composed of men of Mr. Gill's calibre, and more unfortunately, Mr. Gill is not powerful enough to bring the Union into line with the moderate policy which we feel sure he would advocate in dealing with employers.

And the worst of the whole business is that these piscatorial Captain Kidds are in the majority aliens from the Scandinavian countries — with a sprinkling of Britishers chock full of socialism of the kind that would like to see Great Britain thrashed by Germany just to get back at capital—which, in their opinion, are forever grinding dollars out of their sweat and blood.

The men who do OUR fighting get \$1.10 a day, but B. C. fishermen who earn \$9, \$12 and \$14 a day, are now striking for \$12, \$16 and \$19 a day!

How would you like to make \$12.00 a day just fishing? And have your bed and board thrown in? Pretty soft, eh? Well that's what the men who fish for flat fish get out on the Pacific Coast. These flat fishermen, who empty the trawl net when it is full of soles, flounders, skates, red cod, ling cod, grey cod, whiting and others, are paid three-quarters of a cent a pound for that muscular effort and cleaning the fish. And the company puts up the meals, and furnishes the transportation to and from the trawling banks. Some soft job, by heck!

Three-quarters of a cent a pound doesn't look large just as you say it, but when you multiply it by 150,000 it tallies up in a big way. A manager of a trawling company at Prince Rupert that sells flat fish all over the west at 10c a pound to the consumer, says that three-quarters of a cent a pound represents **\$12.00 per day per fisherman**, or more than **\$700 each to the fishing crew of a trawler for sixty-three days actual fishing time since March 1st.**

Better than that, on one of the latest trips of a trawler the flat fisherman earned **\$32.16 per fisherman per day**, while the **smallest earnings** during three months were **\$6.70 per fisherman per day**. And his board and keep and transportation to the trawling grounds didn't cost the flat fisherman a cent.

Well, if \$12.00 a day as a flat fisherman will not satisfy you, what about \$14.00 a day as a halibut fisherman, with no board or rent to pay and free passage to the fishing grounds? The other day at Prince Rupert a halibut boat after being out nineteen days paid each fisherman **\$274 for his fishing**, or at the rate of **\$14.42 a day**. Since February 16th, the average daily earnings of each halibut fisherman on this particular boat were **\$10.40**, with no deductions. On another halibut boat, the fishermen got only **\$9.57 per fisherman per day**, which of course isn't to be compared with **\$14.00 a day** or even **\$12.00 a day**.

But with the boys in uniform getting **\$1.10 a day**

straight pay with some allowances, even **\$9.75 a day** looks pretty easy and then it is a fairly "safe" job compared with going "over the top," because going over the side of a boat is a cinch.

But would you believe it, the deep-sea fishermen on the Pacific Coast now want their wages raised **33 1-3 per cent**. The **\$9.00** a day fisherman wants **\$12.00**; the **\$12.00** a day fisherman **\$16.00**; the **\$14.00** a day fisherman **\$19.00**. And no board or rent or steamship fare to pay, and no special high cost of living argument!

When the news gets around, there is bound to be a general "hike" from Eastern Canada to the fine Pacific fishing trip that pays **\$9.00, \$12.00 or \$14.00 a day** per fisherman—with everything found! Let everybody go a-fishing!!

MORE FISH ON THE TABLE.

Under the above caption the Montreal Gazette — one of the leading morning papers of Canada — publishes the following editorial in a recent issue.

The consumption of fish to-day in Canada is greater than ever. One reason for this condition is that the prices of beef, pork, and mutton have placed them beyond the reach of many household purses, so far as daily consumption is concerned. Another cause is the appeal to the citizens to use substitutes for flesh meats as much as possible. The regulations also have had the desired effect, and the advertising of fish as wholesome and substantial food has been extensive. So fish is being bought freely at all the retail markets and the tendency will continue without a doubt until normal conditions are restored, and perhaps after that.

It is noted that the demand for salmon, halibut, mackerel, trout and other fancy fishes is greater than the supply, with the natural result that prices for such fish are maintained at a high level. But there are other varieties of fish in abundance, equally nourishing and succulent, and which retail at quite moderate rates, comparatively speaking. The popular haddock is supplied to the local market in large quantities, prices ranging from 8 to 13 cents a pound at the retailer's. The fishermen of the Atlantic coast gather the haddock in at the rate of 26,000 tons annually, most of which is consumed in a fresh state. The rest is smoked and comes to the table in the colder months as the appetizing finnan haddie. Cod, another plentiful fish, is caught to the extent of 100,000 tons annually by Canadian fishermen. It is one of the best fish foods and retails at about the same figures as its sea brother, the haddock. Fried, boiled or baked fresh it satisfies numerous appetites, but it is more frequently seen in the salted state. Other moderately-priced fish sold everywhere are the freshwater pike, dore and whitefish. Some of the fishes mentioned are always on the public market in considerable quantity and at fair prices. The Government's intention is to increase the supply and to keep the prices charged to the consumer within reasonable bounds.

The public has been informed frequently of late that fish yields a great deal of protein, which is the chief body-building material. Certainly fish food has much energy value and is an excellent substitute for animal meat as the foundation of a square meal. Properly cooked it should appeal to even the discriminating palate. Anyway, this is war-time, it is necessary to conserve the chief foods of ordinary days, and there

is no limit placed on the consumption of fish. So fish must be on the platter of the Canadian householder's table for quite a few meals in the week.

AMEND FISHERY RULES IN QUEBEC.

The Naval Department announces that the fishery regulations in Quebec have been amended, so as to permit the seining of smelts after the first of September. For years past the regulations have prohibited this form of fishing in Quebec before the first of October, but with transportation facilities which are now available from the coast to Rimouski, Bonaventure and Gaspé, it is feasible to ship smelts into the interior markets after the first of September.

The regulation prohibiting the taking of fish by any means in Brome Lake from March 1st to June 15th, has also been amended. This regulation had for its object the protection of the bass fishery, but as pike has become very numerous in this lake and can be taken by hook and line in the spring of the year, angling will in future be permitted.

FISH SHIPMENT.

Following a conference of the transportation companies, the principal shippers of fish, and representatives of the Canadian Fisheries Association, which was called by the Department of the Naval Service, and which met in Montreal on the 21st ultimo, additional excellent transportation facilities for fish from the Atlantic coast was provided.

A train, to be known as the "Seafood Special", leaves Mulgrave and Halifax on Thursday, Friday and Saturday of each week. This train hauls refrigerator cars for the transportation of fresh fish. The train operates on a practically express basis and the cars are hauled right through to Toronto.

For a number of years past, the Department of the Naval Service with the object of encouraging the demand for fish, has been paying one-third of the express charges on shipments from the Atlantic Coast to Quebec and Ontario, but as all shipments available on the days on which the "Seafood Special" operates, should be forwarded by it, it has been decided to withdraw all assistance on express shipments during such days.

THE SMOKING OF HADDOCK FOR THE CANADIAN MARKET.

Miss Patterson, M.A., has written an article which appears in the latest report of the Biological Board in Canada, on the subject of "The Smoking of Haddock for the Canadian Market." She thinks the Scotch method is superior to the Canadian method. The point of prime importance in the Scotch industry is the improvement of the flavor of fresh fish, and the point of secondary importance is the preservation of the fish. Because Canada is a much larger country and markets are more widely separated, these points of importance are reversed by the Canadian trade. She says, "it is surely the part of wisdom to create a demand on the market by first producing the most excellent haddie, and then to encourage fish curers to reach and keep up that standard of excellence."

After giving in detail the results of several scientific tests of curing methods, she concludes that fish

should be split in the way usually done in Canada, but also an additional cut should be made along the back bone. If the fish are allowed to remain on ice from one to two hours, they will become freed from blood. They then should be washed freely with fresh water.

Small fish should be salted not more than fifteen minutes; larger fish up to 4 pounds in weight, not more than one hour, and half an hour is the best limit if the flavor of the fish is to be preserved. The delicately flavored fish results from it being smoked for 10 hours over a beechwood sawdust or old wood smoke. Smoking from 15 to 18 hours, browns and dries the fish and aids in preservation.

The more lightly cured fish should be used on the home markets, and the heavier salted for the distant ones.

She emphasizes the fact that is always in the mind of the successful fish curer, viz., that if the best Finnan Haddie is to be produced, then only first-class perfectly fresh haddock should be used.

Miss Patterson's article emphasizes the fact that if Canadian curers adopted Scotch methods and used similar care, Canadian produced Finnan Haddie would amply supply the wants of the Canadian consumers.

INTRODUCING THE FISHERETTE.

A New Experiment in War Work for Women—Plucky Nova Scotians Take to Fish Cleaning in Oil-Skins and Sou'westers.

This is not the kind of wartime occupation that can reasonably be advocated for Canadian girls in general. But it is a stimulating example that should prove an incentive to men and women alike. These hardy Eastern women have eschewed the easier paths open to them and have deliberately chosen the rocky trail which has known no other feminine feet in the history of Canada's industries.

Early in the season though it is, glowing accounts are coming from British Columbia of what girls have done in berry-picking in the far West. In the middle West they are operating tractors and driving cultivators and standing shoulder to shoulder with their men in running the farms. But in the far East they have gone a step further. They have donned men's oil-skins, rubber boots, and sou'westers. They are not farmerettes; nor are they berry-pickers nor dairymaids. They are—well, let us introduce them to you—Canada's first fisherettes!

Anyone who knows the native life of Scotland can summon up in this connection a vivid picture of the Highland "fishwives." So they call them in the land of cakes and herring! They were really the precursors of our fisherettes—with a difference. These Canadian girls are young and strong, and the necessity of war rather than the custom of the ages has led them to take up this work.

But the Highland fishwives—who can ever give them full credit for the faithful labor of years, the toil of their lives, the rigor of their work? Many of them grew old and bent before their time because of the everlasting burden of fish they bore in the creels on their backs. They were picturesque to look at—but they were beasts of burden, more like the women of France who dragged along the plow yoked to their bodies, than like normal human beings. In the days

before the war when their business flourished, they wore about as many striped petticoats as Miss Hook of Holland. On their heads were shawls or "mutch-es."

Very different is the Canadian fisherette! Her outfit is all-enveloping, smart and utilitarian. She is recruited from the ranks of the younger women on the fishing coast. She is taking the place of her sweetheart or her brother. She has entered into the "big fish" game. In other words, she has cut ice in an entirely new spot. For years the large fish companies on the East coast have been bringing girls out from Scotland to work in their factories, to can and pickle and pack—to handle the herring and other small fish.

But it remained for the Maritime Fish Corporation of Canso, Nova Scotia, to employ this dozen or so of girls to handle the big fish in sheds—to clean them and skin them and prepare them for the market.

It was of the fisher folk that the plaintive song was written, "For men must work and women must weep." It does not look much like it when you see this picture! You feel more inclined to say "Cheero! for Canada's daughters. Men must fight and women must work."

These women are not weeping—although their sweethearts and brothers are in France and some of them are beneath the sod. They are—cleaning fish.

It sounds prosaic enough, but patriotic work is often prosaic and hard and tedious. There is little romance about it on this side of the Atlantic. There is not even the inspiration of direct contact with war's actuality. It is simply a hard level grind—sometimes objectionable, often monotonous.

What these girls are doing is not even easy. They are not playing with suckers. These fish are big fellows—heavy to handle, cumbersome and slimy. In learning, the girls get their hands cut with the fish knives often enough. But they are mighty deft about it and are fast earning a reputation for rapid, skilful work.

The Canada Food Board has been telling Canadians for months past that they must eat more fish. At last people are beginning to realize it, with the result that the demand for fish is increasing, and the Atlantic dealers are having a busy time keeping the markets supplied with the now-famous ten-cent-a-pound fish. So many of the fishermen have heard their country's call to arms that it is doubly hard to cope with Dominion and European demands.

And here is where the fisherette comes in!

If women can help on the farms, in the factories, in industries of very kind, they are surely fitted to take their places by the fishermen, and if they cannot go out in dories to catch the precious sea food, they can at least have a share in handling it on shore.

There are hundreds of girls by the coast who might take this to heart. They are on the spot. Their strong young hands and stout hearts are needed in the fishing business. The trail has been blazed. Will they follow in the wake of those pioneer fisherettes? And will the example set by this handful of girls inspire women in other parts of the country to cast about for the most useful and necessary forms of work to engage in—even if they have to break new trails?

This, after all, is the true test of their spirit, their courage and their endurance.



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"FISH IS THE ONLY READILY AVAILABLE SUBSTITUTE FOR THE MEATS SO URGENTLY REQUIRED FOR THE SOLDIERS AND CIVILIAN ALLIES OVERSEAS"—*Henry B. Thomson.*

SALT CARGOES FOR GASPE AND ST. JOHN.

Through the efforts of the Fish Section a cargo of salt amounting to 3,500 tons will reach the Gaspé Coast at an early date from Cadiz. This salt is for Robin, Jones & Whitman, who through a misunderstanding has applied for a supply through the Department of Naval Service at a time when allocation of vessels to bring salt from Spain were only being made by the British Ministry of Shipping when supported by the Ministry of Food or the Canada Food Board.

The situation along the Gaspé coast was becoming very serious because all of the previous supply was exhausted and salt must arrive there in time to be distributed to remote sections before the winter ice sets in. The steamer "Electrician," formerly the "St. Winnifred" will bring the salt to Gaspé.

Arrangements are also being made by the Fish Section of the Canada Food Board for a shipment of 2,000 tons direct to St. John, this in behalf of Messrs. Gandy and Allison.

These shipments together with the 20,000 ton shipment previously arranged for Halifax will provide an ample supply of salt for the 1918 season. Of the Halifax shipment 11,500 tons have already arrived and the balance is expected during the summer months.

SPECIAL FISH CAR FOR QUEBEC.

The Canadian Government Railways advise they would be willing to run a special refrigerator car from Mulgrave and Halifax, to Quebec every week providing 10,000 pounds gross weight, or more, were loaded. Experience with these refrigerator cars show that by using this service regularly fish can be brought to Quebec in first class condition. Refrigerator cars of fresh fish to Montreal and Toronto move every week, the cars are iced to full capacity at shipping points, and there have been no complaints on the condition of the fish up to the present.

The cost of icing the fish is very reasonable, it protects the fish, and if the trade in Quebec work together to make up a car, fish will arrive in much better condition than if shipped in ordinary express cars without refrigeration.

This ruling is a special favor to Quebec consumers for the allocation of a car for only 10,000 pound weight of fish and should result in a regular supply reaching Quebec from the Maritime shore.

PACIFIC FISH FILM NOW CIRCULATING.

The Canada Food Board's films popularizing Pacific flat-fish and cods are now circulating throughout the moving picture houses in the four Western Provinces.

ATLANTIC FISH FILM READY SHORTLY.

Capt. F. W. Wallace, of the Fish Section of the Canada Food Board, has returned from Nova Scotia where, accompanied by an expert motion picture camera man from the Pathscope Company, Toronto, he directed the making of a film destined to popularize Atlantic cod, haddock, pollock, herring and other fish in eastern Canada. Seven days were spent at sea on board of a steam trawler and pictures were taken of steam trawling on Western Bank. Some rough weather was encountered and portions of the film show the trawler rolling in a heavy sea. The film shows some thirty-five scenes from the time the trawler leaves the dock until the catch is packed and shipped aboard the Fish Service refrigerator cars of the Canadian Government Railways. Pictures of the shore fishing fleet were also taken and the whole makes a most interesting and instructive film.

TORONTO DEMONSTRATING FISH COOKING.

Demonstrations in the preparation and cooking of fish are being held in several domestic science schools in Toronto. More work of this nature might be undertaken by school teachers and teachers of domestic science throughout the country. It is war effort of the best and most productive kind. The Canada Food Board's new Fish Cook Book contains the best and simplest fish recipes and can be procured from Ottawa for five cents per copy.

NEW FISH COOK BOOKS NOW READY.

The revised Fish Cook Book prepared by the Canada Food Board has been published and is being sold for five cents per copy. The fish trade should secure copies in quantities and distribute to their customers. The following special prices have been made for large lots. Lots of 100 or more, 4½ cents each; lots of 500 or more, 3½ cents each; lots of 1,000 or more, 3¼ cents each; lots of 5,000 or more, 3 cents each. These cook books will be trade builders and every wholesaler and retailer should stock up with them. The book is printed on good paper, illustrated with first class cuts of fish and bound in a fine colored cover.

ATLANTIC FISH SALES IN ONTARIO.

The market for Atlantic sea fish in the Province of Ontario has been increasing by leaps and bounds. The sales of the better known species: cod, haddock, mackerel and flounders has reached large proportions.

Ontario was always a good market for sea fish, but a great majority of the population preferred lake fish

and would not give any sea fish, other than halibut and salmon, a trial. The work of the Canada Food Board in finding known to the people the cheapness and palatability of sea fish has had excellent results and nowadays cod and haddock have become staples.

A recent campaign in Toronto with haddock, cod and mackerel at prices ranging from 10 to 12½ cents per pound had marvellous results—several carloads being disposed of through local retailers within a few days. Special advertisements were run in the Toronto papers and the response of the public testified as to the value of publicity. After all, publicity is all that is required to make our fish popular.

Correspondence

(Moncton, N.B., June 25, 1918.)

W. R. Spooner, Esq.,
Chairman, Canadian Fisheries Association,
Montreal, P.Q.

("Seafood Special," 1918.)

Dear Sir,—I enclose for your information copy of the instructions issued as a result of conference held at Montreal on 20th June, and relating to the running of a "Seafood Special" so called, from Mulgrave and Halifax to Montreal.

You personally were not in attendance at this conference, but I would be pleased if you would see that a copy of these instructions are distributed to the members of your Board who may be interested.

I trust the influence of your Association will be directed toward the extensive use of the facilities to be provided by this train, in preference to express service.

Yours truly,

C. A. HAYES,
General Manager.

As per conference held at Montreal, June 20th, at which were present representatives of the Canada Food Board, the Department of Marine and Fisheries, the Fish Trade, the Express Companies, and the Grand Trunk and the Canadian Government Railways, the following arrangement for fast freight service was promised:

Commencing Thursday, June 27th, a train to be known as the "Seafood Special" will leave Mulgrave 2.50 p.m. Thursday, Friday and Saturday of each week, and, barring accidents, will arrive Montreal 1.50 p.m. Saturday, Sunday and Monday, making the run from Mulgrave to Montreal in forty-eight hours. A connection will be made at Truro with shipments from Halifax.

This train service is provided for the purpose of handling car load shipments of fresh fish from the Atlantic to the Montreal and Toronto markets. The Agent at Mulgrave will arrange that fish for Toronto only will be loaded in the Toronto car, it being our advice from representatives of the Fish Trade that consignments for other points west of Montreal would be handled by express. The Agents at Mulgrave and Halifax will advise shippers that this expedited service is only necessary in connection with shipments of fresh fish; if shipments of that class of fish do not offer on any of these days of the week, the expedited service will not be given, and shipments offering will be handled on the ordinary fast freights.

The Schedule to be maintained by the Seafood Special is as follows:—

Leave Mulgrave	2.50 p.m.	Thurs.,	Fri.,	Sat.
Arrive Truro	9.05 p.m.	"	"	"
Leave Truro	9.25 p.m.	"	"	"

Arrive Moncton	3.40 a.m.	Fri.,	Sat.,	Sun.
Leave Moncton	4.00 a.m.	"	"	"

Arrive Pacific Junction ..	4.30 a.m.	"	"	"
Leave Pacific Junction ..	4.35 a.m.	"	"	"

Arrive Napadogan	10.00 a.m.	"	"	"
Leave Napadogan	10.20 a.m.	"	"	"

Arrive Edmundston	4.40 p.m.	"	"	"
Leave Edmundston	5.00 p.m.	"	"	"

Arrive Monk	10.40 p.m.	"	"	"
Leave Monk	11.00 p.m.	"	"	"

Arrive Diamond.	4.45 a.m.	Sat.,	Sun.,	Mon.
Leave Diamond.	4.50 a.m.	"	"	"

Arrive Chaud. Jet.	5.00 a.m.	"	"	"
Leave Chaud. Jet.	5.30 a.m.	"	"	"

Arrive Ste. Rosalie	11.45 a.m.	"	"	"
Leave Ste. Rosalie	11.50 a.m.	"	"	"
Arrive Montreal	1.50 p.m.	"	"	"

Shipments from Halifax will be forwarded on Seafood Special leaving that point at 5.30 p.m., and arriving Truro at 8.45 p.m. Thursday, Friday and Saturday, connecting at latter point with Mulgrave to Montreal trains.

Fresh fish arriving Montreal on Seafood Specials for Toronto will be forward on Grand Trunk Seafood Specials leaving that point at 5.30 p.m. Saturday, Sunday and Monday, arriving Toronto at 5.30 p.m. Sunday, Monday and Tuesday.

The following instructions will govern the handling of these trains:—

Equipment.

Superintendents of Districts Four and Six will arrange to supply suitable refrigerator cars for shipments offering and will keep a sufficient number of empties in reserve to meet requirements. The attention of all concerned is called to the importance of returning these empties from the West promptly.

Consist.

In addition to fresh fish through loads for Montreal or beyond may be handled on Seafood Specials. Extra heavy shipments, such as steel, scrap or coal should not be forwarded, and should trouble develop on any car other than fresh fish, it should be set out immediately to avoid delay. The tonnage of these trains between Mulgrave and Truro will not exceed 500 tons and between Truro and Montreal 80 tons. Only cars containing fresh fish may be added to these trains between terminals. At terminals dead freight may be taken on provided the tonnage limit is not exceeded.

Superintendents Martin and Hallisey will advise my office before noon on Seafood Special days, the number of cars of fresh fish offering and full particulars regarding the contents and destination of each car. In addition, Mr. Hallisey will wire complete consist of train on departure from Truro to Superintendents Devenish, Desjardins and Morazain. Mr. Morazain will wire consist of train to Mr. L. Harold, Superintendent of Transportation, Grand Trunk Railway,

Fishermen, retailers, wholesalers and producers of fish are urged to attend the Fisheries Convention at Halifax, August 6th, 7th and 8th. Don't wait for a special invitation. You're invited.

Fish Curing

By J. J. COWIE.

ARTICLE II.

Herring Curing in the Split Method.

The enormous trade in herring cured in what is called the Scotch method is due to the fact that the Jewish people, who are the chief consumers of salted herring on this continent, as well as in Europe, prefer the fish cured in that way. They are ready at all times to pay handsome prices when the quality, size and cure are right; but, as may be gathered from the preceding article, they are very, very particular as to those three requisites. One essential feature of the "Scotch" cure is that the roe or milt is left in the full fish because the consumers referred to, make use of it.

There are other consumers of salted herring on this continent whose demands, however, are not so extensive as those of the Jewish people. They do not make use of the roe or milt, consequently, it is removed before curing takes place. Then, again, fairly large quantities of salted herring are consumed in the West Indies, and it would be difficult, if not impossible, to prevent the fish from going wrong, when submitted to the heat of the tropics, if the roe or milt were left in them. So long, therefore, as people, other than the Jewish people, continue to eat salted herring there will, in all likelihood, remain a demand for what are called split herring.

The term is somewhat misleading as the fish is not really split like a salt mackerel, kippered herring, or finnan haddock. The belly of the fish is simply slit open, and its contents, as well as the gills, removed.

Method of Curing and Packing.

The fish should be perfectly fresh. All "drowned" herring should be separated from the fresh fish. They should be placed under cover as soon as possible after being taken from the nets and kept under cover during the whole process of curing.

Splitting.—The belly of the fish should be neatly opened with a sharp knife. On removal of the intestines the blood should be "broken" along the part of the bone that the splitting has exposed. This can be done quite easily and quickly with one sweep of the point of the knife used as a kind of scraper. This is very important, and should never be neglected by curers of split herring.

Washing.—Splitting renders washing necessary because of the amount of blood and spawn that adheres to the fish. For this purpose weak pickle should be used, not fresh water; moreover, the fish should not be left to soak, but should be simply washed clean and immediately salted.

Salting.—The usual practice is to salt split herring into tanks or large casks where they remain for ten or twelve days, or until they are cured, after which they are packed into barrels.

Tainted split herring are, unfortunately, too common, and one of the chief causes, probably the chief cause of this, is to be found in the use of insufficient quantity of salt, unevenly distributed, when the fish are being put into the tanks or casks; also in the weakness of the pickle with which the tanks or casks are filled up. Nothing that may afterwards be done in the way of salting, when packing the fish in barrels, can

overcome the effect of light or uneven salting and weak pickle in the tanks or casks. It is there the fish must be cured.

As soon as the fish have been washed, therefore, they should be dumped on a clean floor or platform and turned over with a shovel while salt is being very freely spread over them. They should then be lifted into the tanks or casks along with all the salt that can possibly stick to them; more salt being added where it appears light. After the space of from two to three hours the tanks or casks should be filled up with pickle made strong enough to quite easily float a potatoe. A weight should be placed on top of the fish to keep them continually under the pickle. The top of the tanks or casks should then be covered tightly to prevent rain or dust and such like from getting in.

On each tank or cask should be marked the date on which they were filled. The fish should be left in them for at least ten clear days before being removed, and packed into barrels.

Grading and Weighing.—As the fish are drawn from the tanks or casks for packing they should be separated into three grades, namely: Large, Medium, and Small.

The Large should measure not less than 13 inches, the Medium not less than 11 inches, and the Small not less than 9½ inches from the point of the head to the tip of the tail. In the course of grading all tainted or defective fish should be discarded. Each grade should then be weighed into lots of 200 pounds for barrels and 100 pounds for half barrels. From five to ten per cent extra weight should be allowed to each lot in accordance with the length of time the fish have been salted in the tanks or casks.

Barrels.—A barrel constructed to hold 200 pounds of packed cured herring, and a half barrel constructed to hold 100 pounds are used for marketing split-herring.

Good sound spruce or pine close-grained and well seasoned should be used for staves and heading.

The staves for barrels should be cut not less than 27½ inches in length, and 11-16 of an inch in thickness. The staves for half barrels should be cut not less than 22½ inches in length, and 10-16 of an inch in thickness; and the heading not less than 11-16 of an inch in thickness.

The diameter of the head for a barrel should be 17 inches from edge to edge. The bilge of the barrel should be not less than 20 inches in diameter, outside measurement. The diameter of the head for a half barrel may be 14 inches from edge to edge, and of the bilge 17 inches outside measurement.

Barrels and half-barrels should be bound with three wooden hoops on each quarter. The ends of barrels should be bound with an iron hoop 1¾ inches broad, and of half-barrels with an iron hoop 1½ inches broad.

The outside surface of the heads and bottoms of barrels and half-barrels should be planed smooth, in order that the stencilling on the filled barrels may be not only legible but neat.

Packing.—The barrel or half-barrel in which the fish are to be packed should be thoroughly rinsed with clean water immediately before packing begins.

Packing should begin by scattering a handful of

salt over the bottom of the barrel, on which the first tier is packed—backs down and heads close up to the sides of the barrel. The next tier should be packed across the one below it, and soon till the barrel is full or the quantity weighed is packed in. Every barrel should contain at least 200 pounds and every half-barrel 100 pounds of fish when completely packed. It is advisable, during the packing, to place two herrings on their side in barrels and one in half-barrels over the heads of the herring in each tier in order to keep the tiers level.

Each tier as it is completed should be salted with an equal quantity of salt spread evenly over it. There should be no spot in any tier with either too much or too little salt. Careful attention to this is essential.

The quantity of salt necessary for each tier depends on the size and quality of the fish and the market for which they are being packed. These points, therefore, should be very carefully considered by the packer.

The Large Grade will require rather more salt than the Small Grade. Fat summer herring will require more than thin spring herring. Then, again, herring intended for consumption in Canada or the United States should be more lightly salted in packing than

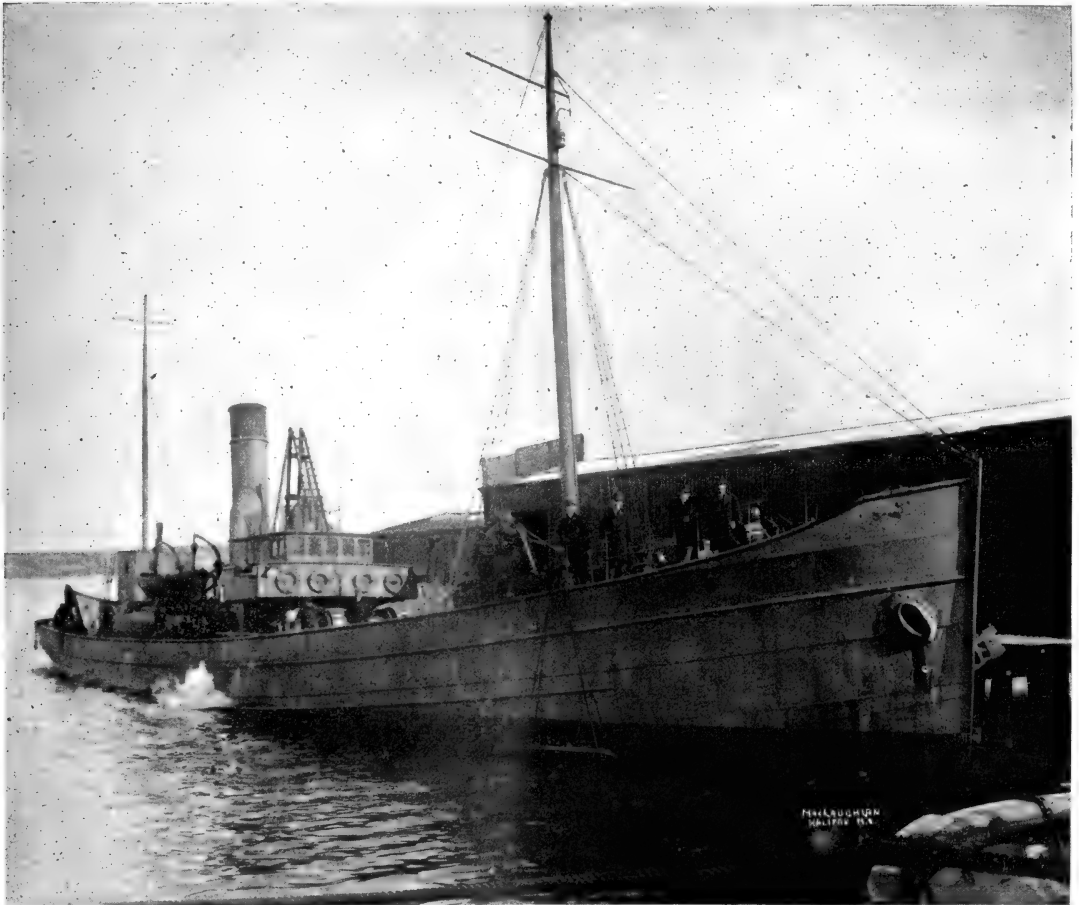
herring intended for consumption in the tropical West Indies.

Trapani, or Ivica salt is perfectly suitable in all stages of split herring curing.

Barrels and half-barrels after being packed full should be immediately headed up made perfectly tight, and filled, through a bung-hole in the centre of the bilge, with clean strong pickle. The top quarter hoops should be made secure with three nails long enough to enter the staves, but not long enough to go through them.

If the filled barrels are kept for some weeks before shipment, they should be protected from the direct heat of the sun and examined frequently with a view to discovering and stopping leaks and repickling. A tap on the bilge with an axe or hammer will indicate whether the barrel has lost any pickle or not.

It should never be forgotten that it is only by close attention to the details of curing, grading and packing that an article fit for sale and consumption can be produced. The continued marketing of an inferior product, sooner or later, puts an end to all trading in that particular commodity.



Steam Trawler of Leonard Fisheries, Ltd.

The British Fisheries

4th Article --- The Drift-net Fisheries

By J. S. WILLIAMS, of Billingsgate, London.

Fishing with the drift-net, particularly for herrings and mackerel, has been practised on the British coasts from time immemorial; it is one of the oldest methods known. At the present time the drift-net fisheries are second in value only to the trawl fisheries; in some respects they are even more important. They are carried on at one part or another of the coasts throughout the year, but are concentrated in certain districts at special seasons according to the appearance of the shoals of fish for whose capture they are used. The great drift-net fisheries are thus seasonal, limited to a period of the year, and differ in this respect from deep-sea trawling, which is prosecuted with almost equal intensity in every month of the year. The drift-net is used to capture the pelagic or migratory fishes which swim about in shoals near the surface of the water, viz., the herring, mackerel, pilchard and sprat. The name "drift-net" is derived from the method in which the net is used. It is shot from a boat in the open sea and allowed to drift with the tide. It consists of a longer or shorter "train," "drift," or "fleet" of nets, composed of separate nets fastened to one another end to end, forming a wall of netting standing more or less perpendicularly in the water and extending it may be to a distance of over two miles from the boat. The upper part of the net is corked and the lower is attached to a heavy rope at intervals, while surface buoys are attached to the upper part at the junction of two nets by "buoy-ropes," by lengthening or shortening same the fleet or train may be made to fish deeper down or nearer the surface as desired. The drift-net is essentially the same for whatever fishing it may be employed in, but it differs in mesh, in length, etc., according to the kind of fish it is desired to capture. The shoals moving about encounter the wall of netting; the fish too small to be caught pass through the meshes and escape; those somewhat larger attempt to get through and become meshed, usually by the gills—the net is a drifting "gill-net." The nets used to be made of hemp twine; they are now practically all made of cotton, which is more effective and cheaper. With few exceptions, drift-net fishing is carried on at night; the fish come more to the surface in the darkness, and the nets are less visible.

The Statistics of the Drift-Net Fisheries.

In 1913 more than half of all the fish landed on the coasts of the United Kingdom belonged to the "pelagic" division, the quantity being about 645,000 tons. As an addition to the food supply, however, the proportion was really greater, inasmuch as the pelagic fish are weight for weight much more nourishing than the demersal fish taken by trawl and line, and it has been estimated that about 65 per cent of the nutriment derived from the sea fisheries comes from this group. The official figures of the pelagic fish landed in 1913 are as follows:—

	Cwts.	£
England and Wales	7,785,239	2,531,979
Scotland	4,532,093	2,100,619
Ireland	582,543	212,405
Total	12,899,875	4,844,903

The totals are made up of the following:—

Herring.

	Cwts.	£
England and Wales	7,313,425	2,325,084
Scotland	4,449,323	2,087,754
Ireland	420,620	159,457
Total	12,183,368	4,572,295

Mackerel.

	Cwts.	£
England and Wales	345,095	167,236
Scotland	74,348	10,190
Ireland	160,459	52,735
Total	579,902	230,161

Sprats.

	Cwts.	£
England and Wales	75,156	17,794
Scotland	8,117	1,772
Ireland	1,464	213
Total	84,737	19,779

In addition to these, 51,563 cwts of pilchards, valued at £21,865 were landed in England and Wales, and 305 cwts of smelts ("sparling"), valued at £903, in Scotland. The overwhelming importance of the herrings is apparent, forming 94.4 per cent of the total quantity and value, the mackerel forming about 4½ per cent. All the pelagic fish are not caught by drift-nets; a small proportion is taken by seines, trawls, etc. Particulars do not exist for each country, but in England and Wales, in 1913, 93 per cent of the herrings and pilchards were taken by drift-nets, 81 per cent. of the mackerel and 46 per cent. of the sprats.

The Herring Fisheries.

In a previous article something has been said as to the gradual development of the herring fisheries. The boats grew larger and more seaworthy, the nets more extensive and the fishing grounds got farther from the shores. Twenty years ago the steam-windlass had almost everywhere replaced the hand-capstan for hauling the nets in the deep-sea fishing, and in 1897 steam began to be used for the propulsion of the boats. The advantage of the steam-drifter were quickly recognized, and just as in the trawling industry, the introduction of steam propulsion gave a great impetus to the fishing. It enabled the fishing grounds to be visited in calm weather or against head winds,

shortened the voyages, allowed more nets to be carried, and increased the catches of herrings. The steam vessel was able to get the early markets and the high prices. A few days later the motor herring drifter was introduced, and it also made rapid headway for the same reasons. These steam and motor vessels can now carry on the fishing throughout almost the whole year—from the south of Ireland to the Hebrides, the Shetlands, down the east coast, finishing up at the East Anglian fishery late in the year. In a report of the Scottish Fishery Board it is said that in one year the average gross earnings in the summer fishing in an east coast district were, for steam-drifters, £1,388; motor-boats, £973, and sail boats, £412. In consequence of the more profitable fishing of the power vessels, the number of sail boats engaged in the herring fisheries has diminished very substantially in recent years, while the number of steam-drifters and motor-drifters has increased. In 1913 there were 671 English steam-drifters (624 belonging to North Sea ports—Lowestoft having 334 and Yarmouth 205), 192 first-class sailing drifters, 125 motor-drifters and 85 motor boats employed in the herring and other fisheries. The number of Scottish steam vessels other than trawlers was 884 and the motor boats number 523, the greater number of both being engaged in drifting for herrings. As showing the extent to which the power vessels have replaced the sailing vessels in the British herring fisheries, the following table stating the quantities of herrings landed by each kind of craft in 1913 is of interest.

	Steam Cwts.	Motor Cwts.
England and Wales	6,701,182	222,041
Per cent	91.6	3.0
	Sail Cwts.	Total Cwts.
England and Wales	389,637	7,313,425
Per cent	5.3	
	Steam Cwts.	Motor Cwts.
Scotland	2,863,141	366,610
Per cent	64	8
	Sail Cwts.	Total Cwts.
Scotland	1,219,572	4,449,323
Per cent	28	

Under "steam" in the English returns, 528,356 cwts, or 7.2 per cent, taken by trawlers, are included, and in the Scottish 12,106 cwts or 0.3 per cent; 565 cwts in the English total are unaccounted for.

The Fishing Grounds.

There are two herring fisheries distinguished in Ireland, one the summer fishing, from May to October, carried on chiefly on the east and north coasts, and a winter fishery, from October to January or February or later. In 1913, the former supplied 229,000 cwts and the latter 142,000 cwts. In Scotland three fishings are distinguished, (1) the winter fishing from 1st January to 31st March, chiefly at the Hebrides, but also at other parts of the west coast, at Wick and the Firth of Forth; in 1913 it furnished 628,197 cwts; (2) the early summer fishing, from 1st April to 30th June, chiefly at Shetland and Orkney and along the east coast, but also on the west coast; it supplied in 1913,

1,445,469 cwts; (3) the great summer and autumn fishing, from 1st July to the end of the year, chiefly on the east coast, but also at the Orkneys, Shetland and on the west coast; it supplied in 1913, 2,377,657 cwts. In England there is an east coast spring fishing of little importance, the great fisheries being in late summer and autumn off the East Anglian coasts, mainly from Yarmouth and Lowestoft. By far the greater proportion of the herrings landed are derived from the North Sea. The following shows the quantities, in cwts, landed in 1913, on the various coasts:

	East Coast.	West Coast.
England and Wales	6,935,413	275,632
Scotland	2,377,022	1,044,606
	9,312,435	1,320,238
	South Coast.	Orkney and Shetland.
England and Wales	102,380	.....
Scotland . . . . .	.....	1,027,693

Almost 95 per cent of the herrings landed in England come from the North Sea and about 80 per cent of the total landed in Great Britain. Though herrings are caught somewhere or other in every month of the year, the concentration of the fishings in certain months is a conspicuous feature. The following gives the quantities landed in each month, to the nearest 1,000 cwt, the figures for Yarmouth and Lowestoft being shown separately:

	Jan.	Feb.	Mar.	April	May	June
Yarmouth . . . . .	..	..	..	..	..	..
Lowestoft . . . . .	..	..	..	4	..	..
England	11	1	..	5	38	133
Scotland	238	289	98	24	403	1,018
	249	290	98	29	441	1,151
	July	Aug.	Sept.	Oct.	Nov.	Dec.
Yarmouth	4	9	93	1,953	1,005	59
Lowestoft	—	2	13	1,297	758	76
England	427	572	591	3,508	1,819	207
Scotland	972	1,093	190	40	30	52
	1,399	1,665	781	3,548	1,849	259

The herring is a coast fish, and spawns in shallow water or water of moderate depth. The fishery is carried on from quite near the shore, in bays and arms of the sea, to a distance of 70 or 80 miles off.

The Disposal of the Herrings.

Precise information is wanting, but the best authorities estimate that less than 20 per cent of the herrings are consumed at home and over 80 per cent exported. Those consumed at home are used fresh, smoked as bloaters, kippers, reds, and a few tinned or pickled. By far the greater quantity are pickled for export. In 1913, 1,166,598 cwts of fresh herrings, valued at £589,657, were exported, Germany taking 1,111,548 cwts, or 95 per cent, of a value of £551,771. The exports of cured or salted herring amounted to 8,795,232 cwts, valued at £5,331,042, Germany taking 3,996,892 cwts, or over 45 per cent, the value being £2,267,108. British cured herrings go over almost the whole world, the pickled going chiefly to Germany and Russia and the smoked fish (far less in quantity) to the Italian and Greek markets.

The Mackerel Fisheries.

A considerable proportion of the mackerel landed, especially in Scotland and the east coast of England, are taken in the herring drift-nets, but there are also regular mackerel fisheries, chiefly by drift-nets and also by seines, trawls, lines and fixed nets. Of the 345,095 cwts landed in England and Wales in 1913, 280,905 were taken by drift-nets, 28,606 by trawls, 19,592 by seines, 10,593 by hand lines and 5,124 by fixed nets. Of the total quantity, 177,551 cwts were landed on the east coast, 116,715 on the south coast and 50,829 on the west coast. The chief ports were Newlyn, Lowestoft, North Shields and Milford. Most of the mackerel is caught in the summer months. In Ireland there is a spring and an autumn fishery, the former from March or April to July, the latter from August or September to February; a large part of the mackerel in the autumn fishing is pickled for the American market. Most of the mackerel is consumed at home in the fresh condition, but there is also a considerable exportation. In 1913, 14,849 cwts, valued at £16,010, were exported, mostly to France and Belgium, and 98,370 cwts of cured, valued at £79,367, nearly all to the United States.

The Pilchard & Sprat Fisheries.

Little need be said about these. The pilchard fishery is a characteristic Cornish industry, the fishing being carried on chiefly from July to October; most of the pilchards are landed at Newlyn, Mevagissey & Porthleven. Of the total of 51,563 cwts landed, 48,067 were taken by drift-nets and 3,496 by seines. Most of the pilchards are cured for the Italian market; the exports thither in 1913 amounted to 32,850 cwts, of a total export of 37,101 cwts.

Sprat fishing is carried on in bays and estuaries in the winter months, from November to February or March, several kinds of fishing apparatus being employed. Of a total of 75,156 cwts landed on the English coasts in 1913, 34,321 were taken by drift-nets, 32,354 by stow-nets (a large bag-net attached to a boat at anchor and fishing with the tide) 6,016 by seines and 2,465 by trawls. Most are taken on the east coast, chiefly on the coast of Essex and Suffolk, but also on the south coast; the Scottish fishings are in the Firths of Tay, Forth, and Beaulieu. Nearly all the sprats are consumed fresh, but some are smoked, an industry which used to be of far greater importance than it is now. Sprats are not mentioned in the returns of the fish exported, but it is known that large quantities are bought by Swedes and Norwegians, to be manufactured as "Swedish anchovies" and "sardines," in which form they come again on British markets.

PENALTIES FOR BREAKING FOOD LAWS.

"Any person violating any provision or any order or regulation of the Canada Food Board now or hereafter made in pursuance of the power invested upon it, is guilty of an offence, and shall be liable upon summary conviction before a Police Magistrate or a Justice of the Peace to a penalty not exceeding \$1,000, and not less than \$100.00; or to imprisonment not exceeding three months, or to both fine and imprisonment." By Order-in-Council, P. C. (1542) of June 22nd, 1918. The enforcement of the orders and regulations of the Canada Food Board depends principally upon the patriotic co-operation of the municipal police authorities.



Plant of Connor Bros., Black's Harbor.

The Way of Japanese Nimrods

By GAYNE T. K. NORTON.
(Taken from American Forestry Journal).

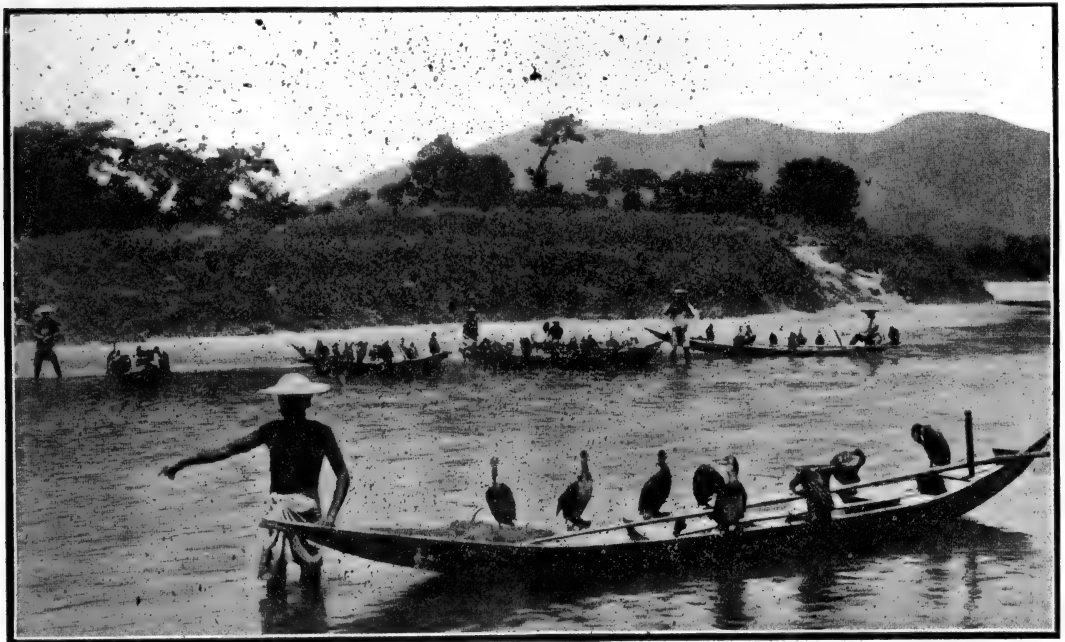
An engineering friend, recently returned from Japan, is full of tales and stories of the customs and habits of the Japanese. However, like many travelers, he looked much and saw little, and of the little seen no form of record was kept. It is small pleasure to hear travel stories recounted by such folk. Beyond the engineering work—the work of rebuilding the entire Japanese railway system at a cost of 308,002,000 yen has been started—which he knows very well, the cormorant fishing interested him most.

The custom of using the sea-birds to catch fish for market, a habit practiced today in many parts of Japan, was observed on the Nagara River, near Gifu, in the province of Owari. In certain parts of China the birds are used in the same way. The species of cormorant used belongs to the same family as our double-crested cormorant, or shag, and is much like him.

The native fishermen breed their own birds as a

Mosquito nets are provided them during the summer to insure their comfort. The fishing always takes place at night by torchlight.

Four men occupy each boat. The boats go out in small fleets and drift slowly downstream; three hours' fishing is a night's work. The man at the stern does nothing but manage the craft. In the bow the master stands, wearing the peculiar hat of his rank, handling a dozen trained birds with astonishing skill and coolness. This skill has earned for the fishermen of Gifu a reputation that might be envied even on Great South bay. A fisher of the second grade is amidships, handling four birds. Between the fishers is the fourth man, called kako from the bamboo striking instrument of that name which he uses, whose sole aim is to make the noise and disturbance necessary if the birds are to be kept at work. He helps out by shouting, caring for extra apparatus and lending a hand where needed.



rule. The first bird of the team or corps is caught with the use of decoys set in trees frequently by the birds and bird lime smeared upon the surrounding branches. After one bird has settled and becomes a prisoner it is placed among the bushes, decoys are removed and other birds are caught in the sticky lime. The birds taken are young, being caught in early winter on the coast on their first migration southward from the places of summer residence on the northern coast. Once trained the birds work well from 15 to 20 years. During the winter their food taxes to the utmost the income of the owner, but during the summer they are previous and profitable hunters, or fishers, well warranting the care bestowed upon them.

Each cormorant wears at the base of the neck a metal ring drawn tight enough to prevent fish of a marketable size from being completely swallowed, but at the same time loose enough to allow the smaller fish captured to pass and feed the bird. The ring is never removed. Around the body is a cord to which is fastened at the middle of the back a short piece of stiff whalebone with which the bird is lowered into, or lifted from, the water when at work. To the whalebone a twelve-foot spruce fibre is fastened which is so lacking in pliancy as to minimize the possibility of entanglement.

The fishing ground reached, the master lowers his twelve birds one at a time into the water, gathering

the reins into his left hand. The second fisher does the same with his four birds. The kako starts his din. The birds set to work, diving with wonderful swiftness, as fish, attracted by the torches, become plentiful.

Now is the time the master proves his skill and makes his reputation, for he is the busiest of men. His eyes must be everywhere with his hands working accordingly, adjusting the dozen strings and keeping the twelve erratic fisher-birds from entangling themselves. He must see the moment that any of the flock is gorged—a fact the bird makes known by swimming about in a foolish, helpless way with head and swollen neck erect. Discovering this, the master shortens in on the bird, lifts it abroad, forces open the bill with his left hand, still holding the eleven other lines, and squeezes out the fish with his right hand. The bird is off on a fresh hunt so quickly that the others have had no time or chance to get their reins tangled. The operation is performed with such dexterity and quickness that in a few seconds the whole team is again well in hand and at work. The operation in no way injures the birds, in fact, so accustomed to it are they, that they assist.

From four to eight marketable fish is the usual result for a single excursion of one bird—an average of about 150 fish an hour per bird, or 450 each for the three hours. Multiply this number by 16 and you have the average catch. And do not forget that fish is one of the chief staples of the Japanese.

Each bird in the team has and knows its number. A funny habit with them is the quick-witted jealousy with which they invariably insist, by all that cormorant language and pantomimic protests can do, on due observance of the recognized rights belonging to their individual numbers. Ichi, or number one, the corps leader, the senior in years and rank. The other birds come after him in numerical order according to their ages. He is last to be put into the water and first to be taken out; the first to be fed and the last to enter the carry-baskets when the work is over. Ichi has the post of honor at "the eyes of the boat." Usually he is a solemn, grizzled old fellow, with a pompous air worthy of a victorious politician on the fifth of November. When aboard, the other birds are placed after him, by rank, alternately on either side of the gunwale. If, for instance, number three is placed in the water before number four, or number nine be placed above number seven, a family rum-pus promptly results.

As each bird is taken from the water, the master can tell by its weight if it has secured enough food. If too light it is fed from the catch. The sight of the great, ungainly sea-birds, placed so exactly in the boat—shaking themselves, flapping their wings, gawling, making toilets, clearing their throats, looking about with a stupid stare and indulging in old-maidish tiffs—is quite the strangest one would wish to see.

Saving the Canned Lobster Business

(This article was prepared expressly for the Canadian Fisherman by a gentleman who is recognized as an authority on the practical side of the lobster industry.—Ed.)

We welcome the interest that is being taken in the problem of Canada's supply of lobsters by the scientists from some of our universities. There is much to be learned concerning the nature and habits of this crustacean that should be fully known before one can hope to grapple intelligently with the question of its conservation, and a great improvement in the methods of catching, handling, utilising and preserving of lobsters can be looked for if better information as to their composition and constitution prevail.

Hitherto, conservation has been attempted with only a superficial knowledge of the life and peculiarities of the lobster, while haphazard methods of packing have been used, and any reforms instituted were gained only from the bitter monetary failures of earlier attempts.

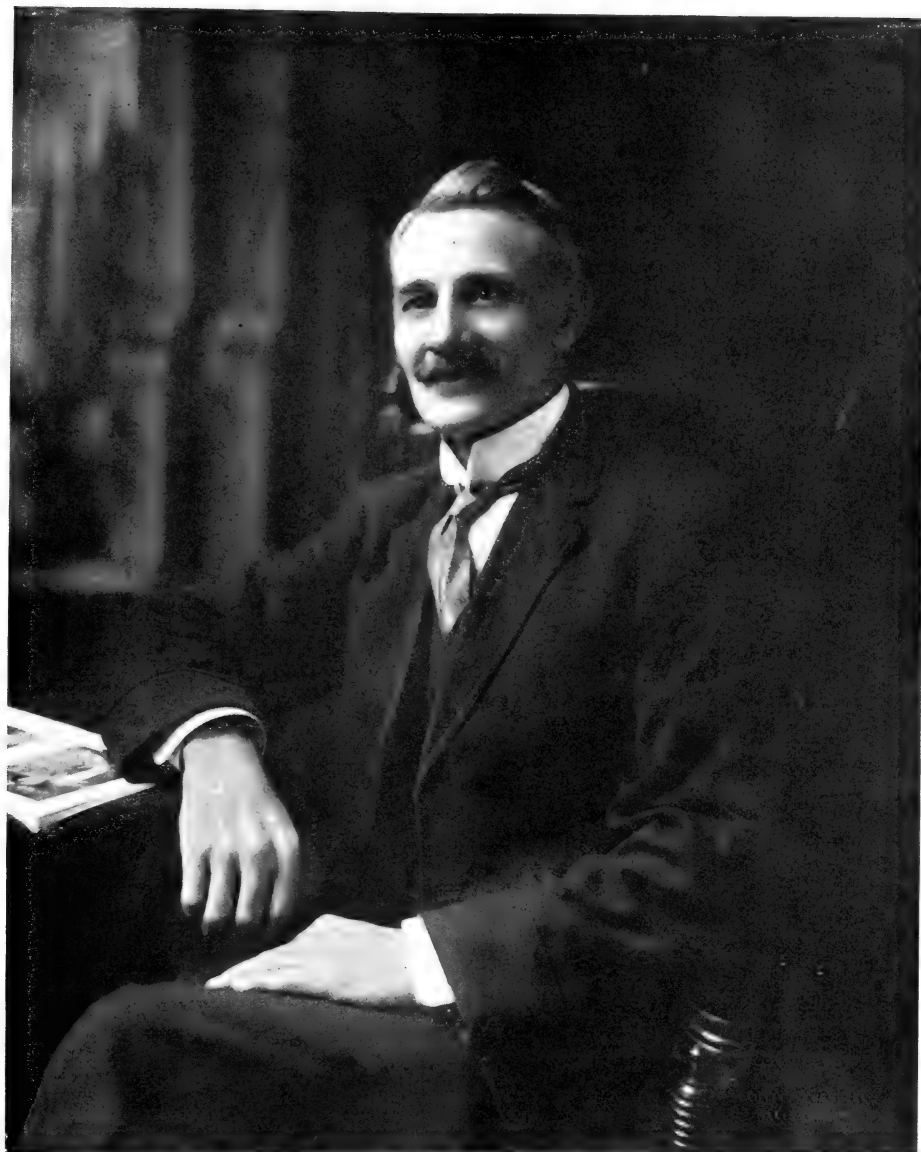
Up to a certain point, our scientists appear to have contented themselves with the discovery that a lobster caught off the Atlantic Coasts of America differed slightly from those secured elsewhere and dubbed it with the name of "Homarus Americanus" to distinguish it from "Homarus Vulgarus" and then considered the matter closed, leaving to the reader's imagination, or buried in the archives of some scholastic institution, wherein the difference lay. But as to the reason why there is, or should be, a variance, or how caused, that had apparently been passed over and the primary fact evidently considered sufficient to be

illustrated as proof of the Darwinian theory of evolution.

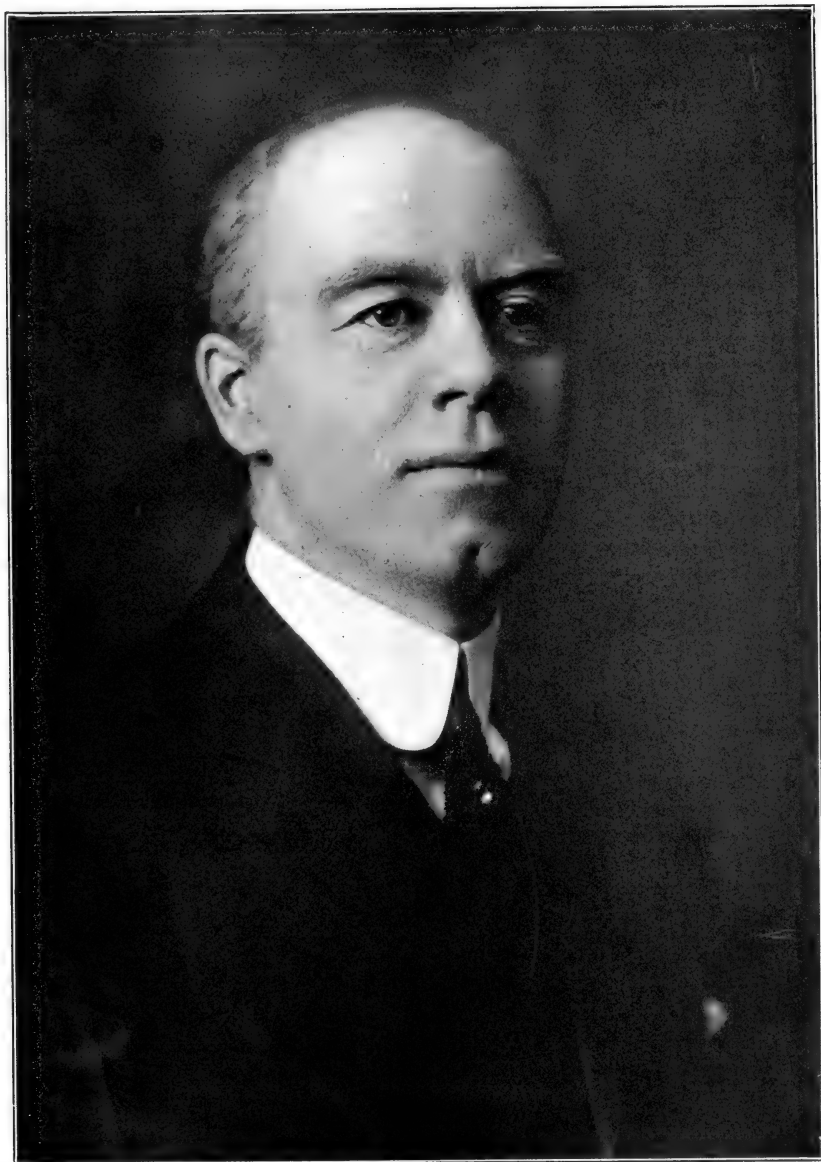
Too long there seems to have existed in Anglo-Saxon countries an idea that Commerce and Science were far removed; that commercial life and scientific study had no connection with one another. It was "infra dig" for a professional man to directly connect his researches with matters of money; his duty was confined to matters suitable for text books that appeal to the intellect and not to the purse. Like old-fashioned preachers, educated with theories of future punishment and brimstone, who hate to depart from their original modes of obliterating original sin, or like old-fashioned doctors whose interest in curing sick people is greater than that of keeping healthy people well, some of our scientists' interests seem to lie in giving each product of their own land and sea a foreign name and then going to explore foreign countries for additional curiosities to give them names of their own.

It is probably true that this war has aroused in our scientists a new conception of their duties, and means of serving their country. In any case, the awakening is apparent, and those interested in the lobster industry heartily welcome and will assist those who are now devoting their attention to the lobster.

Unfortunately those now studying our Canadian lobster are being started out with incorrect statistics regarding the situation. Figures are given to them



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that the Government have admitted to be incorrect, but which they continue to furnish and publish whenever any Commission or investigation is begun. Incorrect data are misleading and wrong inferences made at the outset are liable to set any enquirers on a false scent.

While admitting there is a shortage in the lobster pack during the last twenty years, there is no such percentage of decline as is shown by Government statistics. There has been a great increase in the shipment of live lobsters during that period, but nevertheless the statistics of live lobster shipments show a decline. The number of traps in use has been arrived at by a system of guess work, and although traps have increased somewhat in numbers they have not done so to the extent claimed. Therefore the "catch per trap" argument, so often used, is robbed of its force. As the number of factories increased and each new packer entering the field prepared for a big pack, and each old packer was determined to maintain his quantity, both were often disappointed at the end of the season and each reported a falling off in the catch to the local inspector, which was duly recorded, although actually not proved. As attempts were made later to obtain more correct returns, the earlier figures were found to be excessive. In many places, the basis upon which the number of pounds of live lobsters packed into cases were computed has been changed, and there has been in the process of correcting the errors of the past some more modest figures regarding this fishery produced. It is **those differences which have erroneously been used since to show that the catch of lobsters is declining rapidly.** One might refer to a series of short articles under the caption of "Talks on Lobsters by Homer D.," which appeared in the Halifax Chronicle early in 1917, containing a number of interesting items showing some of the fallacies in these statistics. However, we agree with the writer of your article last month that the lobster industry is in a bad way, because any decline in the catch must be unsatisfactory to our Dominion while it possesses over 90 per cent of the world's lobster fishery. The supply should be saved for the future, but the Canning Branch of the industry ought not to be condemned upon circumstantial evidence at the outset, or by quoting figures that are known to be incorrect. It is a duty to our scientists that they shall be furnished with correct information regarding the industry, past and present, without being convinced 'ere they begin their work that lobster canning must be tabooed. Then generally speaking the trade will assist them in their researches to the best of its ability.

We welcome the new Minister of Naval Defence's expressed desire to save the lobster industry, and could wish that he had more time to devote to the fisheries portion of his Department, which must unfortunately continue to suffer because matters of Marine Construction and Naval Defence naturally absorb so much time in these strenuous days. His first attempt for the lobster industry is a nine-inch law for Western Nova Scotia, to go into effect next December. But to those in the trade, the re-establishment of a system that had to be abandoned some years ago because of its impracticability is not considered as likely to attain the desired result. One of its present advocates referring to it in 1912 declared it from a canning standpoint as "an absolutely impracticable regulation" and stated then "that the size limits that have

obtained in the past have not accomplished much for the industry."

Of course, if existing factories are known to be detrimental and if there is reason to expect that it will aid the solution of international differences between Canada and the United States, then there would, perhaps, be some justification for establishing such a size limit, but the fishermen of these parts do not wish, generally, the lobster factories to be closed. Statistically, the situation in most of the districts covered by this edict has not suffered much during the last thirty years, and **the Commission now enquiring into international questions has so far given Nova Scotians but scant opportunity to place their case before it,** although the findings of such a Commission are most vital to the people of this province.

The present factories cannot be operated profitably under such a law. It is asserted, with good grounds for the contention, that a lobster factory and a nine-inch limit for Western Nova Scotia cannot be run together successfully. To enforce such a law and induce (or even permit) the factories to remain open, will certainly not be conducive of the Gladstonian maxim of making it easy to do right and difficult to do wrong.

The feeling of the fishermen and packers within the sections affected has not found full utterance yet, but there is bound to be consternation during the coming Fall if the Government retains its present stand. A nine-inch law **sounds** well to the layman, but its efficiency remains doubtful even with the most rigorous enforcement, and without the sympathy of the fishermen and packer the cost of carrying it out will be greater than the benefits derived.

Many in the trade believe that in the recent Act that is also to go into force next season regarding the net weight of lobster tins, the **sound** of fourteen ounces net dry weight of lobster meat in a pound can appeared to the layman as more honest than the request made by some of the larger dealers for a "thirteen ounce" basis. The dealer in asking for this could not be accused of selfish personal interest in his request. Whatever standard is established will naturally apply to all and he would like to have it also standardized in Newfoundland, as a producing country, and in Great Britain and the United States as consuming countries, along with our own, to remove the discrepancies that occur at present. Canned lobsters cannot be packed dry as well as they can with a certain amount of added pickle, and during the bathing process there emanates a certain moisture from lobster itself which permeates with that pickle, forming a "sauce," which is not only palatable, but serves in protecting the action of the tin upon the lobster meat, and in days gone by caused much black staining and cost thousands annually in claims for "blackened lobsters" that is now almost unknown, having been overcome by the addition of this pickle. The cans in use at present for lobsters coincide in size with those of other canned fish foods, such as salmon. To provide for the pickle now necessary, and the net dry weight of 14 oz. in addition, it will be necessary to have larger cans made and stocks now on hand will then be wasted and become practically worthless to the lobster packer. It is easier to pack a tin of lobster on which may be stated (as in Newfoundland) "Net weight of contents 16 oz.," than to certify "net dry weight of lobster meat 14 oz." Those in the trade consider, too, that if an universal standard of net dry weight of 13 oz. be in vogue, then lobsters will be in line with other goods

and whenever infractions occur by packing dishonest weights they can be made easily punishable by adopting the lower basis, whereas if the higher standard is adopted the infraction may be considered accidental because there are periods during the packing seasons when lobster meat is more "watery" than at others. These two new laws for the 1918 season are adding worries to a trade that is already overwhelmed with trials and tribulations in these days of stress.

The items referred to in this article may be controversial, but are not submitted in that spirit. There is that feeling abroad that "the lobster industry is in a bad way" and whereas the general public consider it thus because of the threatened shortage in supply, those in the trade believe that the lobster situation is being made worse by the regulations that are being put into force instead of saving the industry, as is their desired intention. The object of drawing attention to these matters now is that those affected may take any action they consider advisable in regard to the last two items mentioned before they become effective next December.

Then in the midst of these disquieting topics arrives another suggestion from the Department of Naval

Service that all lobster factories shall be closed for a period of years. There are good and sufficient reasons to consider this thoroughly as there have been many who advocated such a course immediately after the opening of the present war.

The Deputy Minister's letter gives among other reasons the rapid decline of the fishery and the cost of fishing equipment and gasoline, as well as the difficulties of transportation, but adds that it does not seem feasible to now stop the catching of lobsters for use fresh. The letter does not state why, though the above reasons apply to the fresh lobster trade as well as the canning industry and so again the canned lobster branch is made the butt for the attack. The canned and the fresh article ought to be regarded together and no preference should be shown to one branch or to the fishermen on one section of the coast over another if the legislation proposed is intended for the whole. "What is sauce for the goose is sauce for the gander," but there may be some reason for the distinction and those interested in the trade both as fishermen and packers should write and meet and consider these questions on common grounds for the common weal.



Berried Lobsters.

Prince Edward Island Notes

The lobster situation was thoroughly discussed at a large meeting of the representative cannery and fishermen, from all parts of the province, held in Charlottetown, in July 3rd.

Senator John McLean of Souris, one of the veteran packers presided, although under the pressure of grief at the death of his only daughter, Nursing Sister Rena McLean, who was lost on the 'Llandovery Castle', a few days before. The chairman briefly stated the object of the meeting, namely, to determine what steps should be taken to conserve an industry which, in his opinion, was being depleted to some extent.

The other speakers included:—Senator Murphy, Tignish, W. B. Tidmarsh, Charlottetown, Manager of the Portland Packing Company, Rev. Dr. P. C. Gauthier, Palmer's Road, representing a group of cannery and fishermen of the western part of the province, Captain Joseph Read, M. P., Summerside, R. N. Cox, who operates canneries at St. Peters Harbor and at the Magdalen Islands, Mr. Fred Bennet, Manager of Peter McNutt and Sons Cannery, at Malpeque, B. W. Lepage, Rustico, J. J. Hughes, ex-M.P., Souris, Simon Pineau, Rustico, Dr. J. D. McIntyre Montague, John S. Cousins, Park Corner, P. C. Gallant, Summerside, Professor Perry of Acadia University and Mr. Andrew Halkett, Naturalist, of the Fisheries Department, Ottawa.

The consensus of opinion was expressed by a series of resolutions passed unanimously. The setting apart of the bays and estuaries as permanent sanctuaries of the lobster, and the fixing of the open season, from the first of May until the thirtieth of June, in each year, were recommended.

All present, pledged themselves to support the Fisheries Department in its efforts to enforce the protective regulations and suggested that an efficient force be organized to carry out these regulations. The meeting also endorsed the action of the Department in its initial step to introduce an educational campaign by appointing scientists to investigate the lobster industry, and it suggested that the educational process be extended, so as to reach the fishermen direct, and enlarged to include other branches of the fisheries as well.

The Resolution also contained following clauses:—"Whereas it is as feasible to stop the catching of lobsters for fresh use, as it is for canning, and whereas the catching of the large lobsters is destroying the lobsters necessary for reproduction, therefore resolved, that if it is decided to close the fishing for a period, that all fishermen, whether fishing for use fresh, or for canning purposes, be treated alike."

There was some difference of opinion as to whether the industry was really being depleted or not, but in the resolution there was a statement that "according to the records of the Marine and Fisheries Department, there is no evidence of depletion as the catch in 1916-17 exceeded the catch of 1897, by 201,878 one pound cans. It was argued from this that with the proper protection, and with the close season kept rigidly closed, the lobster industry can be maintained in perpetuity.

Professor Perry, however, declared that during his tour, the opinion of all the old fishermen showed that steady depletion has been going on.

Mr. Shelton Sharp, who has had twenty-three years experience as a packer on the north side, took an opposite view. He had in his employ a fisherman for twenty years. The first year the fisherman caught 9,000 lobsters: last year 18,000 and in the intermediate years from 12,000 to 28,000, and he had fished the same number of traps each year. Mr. Sharp declared that north of the Island there is a fishing ground, embracing many hundreds of square miles. The ground actually fished each year is only a small part of this. How, therefore, can there be depletion when only the surplus of the larger outside area is caught.

The disposal of the spawn or berried lobsters was discussed at some length. Mr. Halkett advocated the putting back into the sea of every spawn or berried lobster, declaring that, after the eggs had been hatched out, this lobster would again become marketable and legal. When these female lobsters were returned to the sea, their instinct would lead them to the shallow water, to hatch out their eggs. Mr. Halkett could not see any force in the objections made by one of the packers that the spawn lobsters would return to the traps to be caught over and over again.

The suggestion was thrown out that the fishermen should be paid by the Government for each berried lobster on the understanding that they return it to the waters.

Professor Perry declared that the taking of these berried lobsters was one of the great drawbacks of the industry. In one Island factory out of every sixteen females, thirteen were "berried". Time and again he had been asking why does not the Government enforce the law prohibiting the taking of these? Instead of imposing a mere nominal fine, it should make the penalty heavier.

Mr. P. C. Gallant, said that the mother lobster will live for ten hours out of water and it would not be difficult to transfer her to shallow water of the bays to hatch out her eggs.

The majority of the speakers declared that granting the fall fishing last year, was a serious mistake. In the words of Senator Murphy—"Fishermen cannot eat the cake and have it."

Mr. Halkett said that he had visited canneries during the fall season and found conditions something terrible. Lobsters were molting in the traps. In some cases it was not necessary to crack the shells to get out the contents. The soft pasty-stuff could easily be pulled out through the opening left when the smaller claw was detached from the larger.

At this meeting delegates were appointed to the packers conference to be held on August 8th. The proposition made by Capt. Read that there should be a separate Minister of fisheries was unanimously endorsed.

The lobster season in this province closed on June 29th. Taken on the whole the catch would be about two-thirds an average. Last season must not be regarded as a criterion. One of the largest dealers states that during the double season, spring and fall, 500,000 more cans were put up than in the previous year.

The Tale a Salmon's Tail May Tell

Pacific Salmon to Be Tagged.

Now that the study of Pacific salmon scale has demonstrated their life in fresh and salt water, and their age at maturity, the fish, themselves, are to be made to tell their rate of travel from salt to fresh water. Rutter, Babcock, Bareham and Chamberlain, by their experiments and observations, established the life and movement of Pacific salmon in fresh water. Gilbert, by his study of the growth of their scales, has furnished a record of their growth both in fresh and salt water, their age at maturity, and has gone a long way to establish that they seek the waters in which they were hatched to deposit their spawn. And now, for the first time, the salmon itself is to be made to tell the rate of travel from salt to fresh water.

In order to show how long it takes a sockeye to travel from the Strait of Juan de Fuca or from the Salmon Banks and Point Roberts, to the Fraser River, the Governments of Canada and the United States will place silver buttons in the tails of live sockeye taken each day from the traps on the southern shore of Vancouver Island, the Salmon Banks at Point Roberts, after which the fish will be returned to the sea to journey as it will. Lieut.-Col. F. H. Cunningham, Dominion Inspector of Fisheries, Mr. Henry O'Malley, Chief of the United States Bureau of Fisheries, and John P. Babcock, representing the Hon. Wm. Sloan, Provincial Commissioner of Fisheries, conferred in Victoria on July 11th and 12th, and arranged for the interesting and novel experiment to be undertaken at once.

Agents of both Governments will undertake the work at each of the above mentioned points. The work at the traps on Vancouver Island will be undertaken by Dr. Fraser, of the Biological Station at Nanaimo and Wm. H. Rich, a Scientific Assistant of the United States Fish Commission, who, for some years, has been engaged in salmon investigation in California and Oregon. Mr. Rich is especially familiar with experiments in marking fish. The work at Sooke has already been undertaken. Work at the Salmon Banks and at Point Roberts will be begun by the 15th of July. At all points it will be continued throughout the season.

It has never satisfactorily been shown how long it takes the sockeye to pass from Juan de Fuca Strait to the Fraser River. The route they follow has been clearly defined. The move from the Strait of Juan de Fuca to the Salmon Banks off the southern end of San Juan Island and thence, through Rosario Strait, to the Gulf of Georgia and into the Fraser. In the years of abundant runs of sockeye, a small proportion of the schools pass to the west of San Juan Island and through Haro Strait to the Gulf of Georgia. Authorities are in doubt, however, as to the length of time the fish take to reach the Fraser. Though it is known that the fish travel forward only on the flood tides, it has not been demonstrated that they proceed on every flood tide. Some observers advance the idea that the sockeye travel on each flood and continue until they reach the river. Others believe the fish play around in the Straits and Gulf before they enter the rivers; that many of the fish take ten days or two weeks to make the journey. At the recent sittings of the American-Canadian Fisheries Conference in both Seattle and Vancouver, there was a conflict of opinion concern-

ing the time it takes for the sockeye to reach the river. It was because of this conflict of opinion, and because it was essential to clear up the matter in order to determine upon a system of uniform regulation, that the present work of tagging the fish is to be undertaken. In order to settle the question satisfactorily, tagging is to be resorted to.

The fish will be tagged by rivetting to the tail of the fish a silver button, bearing a stamped number. The live fish will be taken from the spiller of the trap, placed in a padded floating crate or live ear, and taken separately from the crate by dip nets. With gloved hands the experts will insert the button through the upper rays of the tail fin and secure it by means of a punch. The fish will then be returned to the open water and note made of the number of its tag and time of liberation. The method of handling and securing of the numbered silver button does not injure the fish or interfere with its movements on its being returned to the water. It can then continue its journey to the river, if it does not again enter a trap or be caught by a purse or gill-net. It is anticipated that the majority of the fish marked and liberated at the traps on Vancouver Island, will be again taken by either the trap or purse-nets in American waters, or by gill-nets in Canadian waters. A reward of 25c will be paid for the return of each tag. The fish from which the tag is removed may be sold in the ordinary way. It is not necessary to return the fish. All that is necessary is to return the tag to a fishery agent of either of the Canadian or the United States Governments, together with a note giving the date, hour, and place of capture, and the reward will be paid.

As at present arranged, an effort will be made to mark two hundred fish per day at each point of operation. By conducting experiments at three points it is believed it can be shown just how long it takes the sockeye to travel from one point to another. A fish marked at Sooke and taken at the Salmon Banks or at Point Roberts, or in the Gulf of Georgia or the Fraser proper, will give the time taken by it to reach that point. If any of the marked fish pass above the fishing limits in the Fraser, it is quite possible that they may be taken at some one of the hatchery egg collecting stations on the upper river.

Fishermen and cannerymen have been asked to keep a sharp lookout for the marked fish. The success of the experiment depends upon the return of a considerable number of the marked buttons. The tale they will tell, will settle a fishery question that is of economic importance.

MORE FISH USED.

The Canada Food Board campaign to increase fish consumption is having results. In the Canadian army stationed or in training in Canada 200,000 pounds of beef were saved in the month of May, and approximately the same amount in the month of June, by the substitution of fish. In the west a trainload of flat fish every few days from Prince Rupert is sold at popular prices under the auspices of the Canada Food Board. In Toronto recently 100,000 pounds of mackerel were sold within one week as the result of a special campaign.

LOOK FOR THE BUTTON.

**Co-operative Salmon Marking Experiments Conducted
By the Canadian Department of Fisheries, the
United States Bureau of Fisheries, and
Local Fisheries Authorities.**

Adult Sockeye Salmon, on their way from the sea to the fresh waters, are being marked with a metal button attached to the upper part of the tail fin, as shown in this cut.

The purpose of this experiment is to secure information regarding the time required for the sockeye salmon to pass from the Strait of Fuca into the Fraser River and on to the spawning grounds at the headwaters of that river. A reward of 25 cents is offered

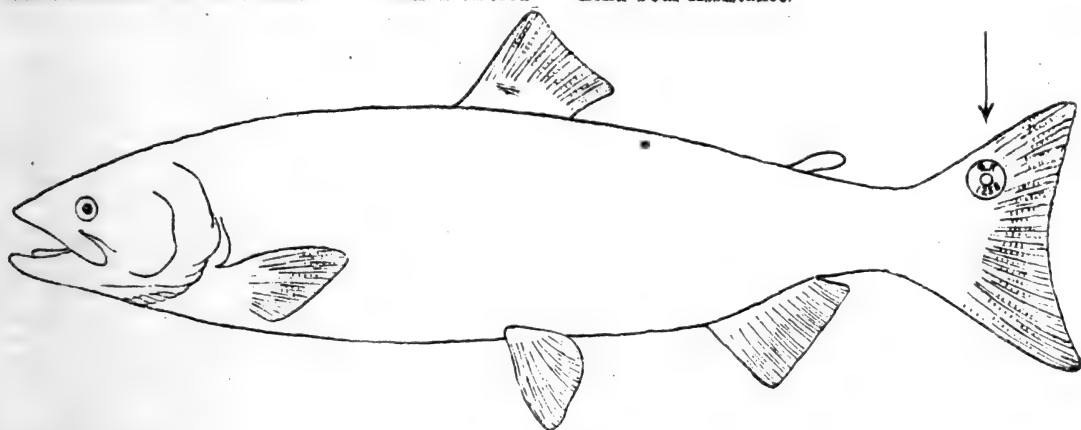
for the return of each button, with an accompanying statement of the place, date, and hour of capture. The fish from which the button is removed may be disposed of as usual.

The success of the experiment depends upon the co-operation of all fishermen, cannery employees, and others interested in the fishing industry on Puget Sound and Fraser River. Everybody should watch for the buttons; record the date, place, and hour of capture of the marked fish; and forward button and information to either of the following addresses:

United States Bureau of Fisheries, 1217 L. C. Smith Building, Seattle, Wash.

Chief Inspector of Fisheries, Vancouver, British Columbia.

Lend Your Assistance.



BILLINGSGATE.

London, June 8th, 1918.

The market this week have presented few features of interest differing from recent weeks. The total landings have been pretty generous, heavy voyages of fish from the Icelandic grounds bulking largely in the aggregate supplies. Several of the choicer kinds, such as soles, turbot, brills, halibut, etc., appear to stand more or less at fixed rates, these figures being the maximum figures now permissible, but other kinds have varied in accordance with supply and demand, haddocks, cod, plaice, and most of the commoner—but none the less nutritious—varieties of trawled fish usually being obtainable well below schedule level. Herrings have been much more abundant, but the fish have run rather small, which has militated against their sale, except at very low prices, while small haddocks, known as “chats” in this country, have been almost unsaleable.

The comparative abundance of fish from home waters has naturally checked the sale of Canadian frozen fish, especially as on occasions deep-sea fish has been obtainable at lower rates than frozen. Still, the frozen fish proved very acceptable during the time of scarcity, and will again serve in this way, although supplies of fresh fish may be expected to be ample on most days for the next few months. In the meantime, Canadian exporters should heed the advice which has been given in this column in recent months for future shipments, and profit thereby. Frozen fish, in prime

is unobtainable, or scarce and expensive. Frozen salmon is much wanted. Cannot the Canadian Fisheries Association put pressure on the authorities to assist shipments?

London, June 22nd, 1918.

Apart from excellent catches from the Icelandic grounds which have been landed at Grimsby and Fleetwood, the general supplies this week have been the lightest recorded for some considerable period. In the deep-sea catches cod and fresh haddocks have been most prominent, followed by plaice. Apart from “chat” haddocks, there has been no particular abundance in the fish landed from home waters, while, for the time of year, herrings have been quite scarce. Demand has remained active throughout, and except for one or two of the most plentiful varieties, all best quality has changed hands at the maximum prices allowed by the Fish (Prices) Order.

During the week, a consignment of frozen salmon and frozen halibut arrived safely, but it is reported that so keen is the demand the whole of the steelhead and silverside salmon, and all the halibut, had been sold “to arrive.” Every endeavor should be made by exporters to secure freight for both salmon and halibut, as there is little doubt that inquiry will remain active for any frozen salmon and frozen halibut received in prime condition. There has been a great shortage of fresh salmon throughout the present season, while landings of halibut are quite insufficient for requirements. It is understood that further shipments of cod, fresh haddocks, flatfish, schnapper,

ities in the near future, and if pressure be placed in the right quarter, consigners should be able to obtain space for salmon and halibut in the vessels bringing over these other kinds.

It is to be hoped that attention will be given to the points enumerated in this column in past months when despatching any further quantity of frozen fish. In the interests of the future of the fish export trade the Canadian fishery authorities might well give their attention to this matter.

London, June 28th 1918.

During the past week deep-sea fish has again been the most prominent feature of the markets, trawlers reaching Grimsby, Hull and Fleetwood from the Icelandic fishing grounds. Fish from the home waters, on the other hand, has been none too abundant, rather boisterous weather for the time of year being reflected in meagre catches in many instances. Speaking generally, all choice quality fish has been eagerly snapped up at maximum prices, but while schedule rates have ruled on occasions at the port of landing for deep-sea fish this kind has not always, in fact very seldom, reached the controlled wholesale, or distributor's figure. In the early part of the week, plaice, also was obtainable below the maximum level. Chat haddocks have been abundant throughout, and on several days quite easy prices, as things are reckoned nowadays have been accepted by salesmen in the inland markets in order to effect a clearance.

After being a comparative failure more or less during the season so far, the Scotch herring fishing has shown a vast improvement towards the end of this week, and to-day (Saturday) generous consignments

are advised from Fraserburgh and other centres. Once this fishing sets in heavy—the fishing is now being prosecuted from some half dozen ports, supplies to the principal consuming centres will in all probability be most liberal, as it is reported that it is not the intention of the Government to purchase any quantity of herrings for pickling this year. In normal times, of course, by far the greater proportion of the herrings landed at British ports were purchased by curers for pickling for overseas markets, and undoubtedly the action of the Authorities in the past two or three seasons has prevented the markets being swamped with fresh herrings, which would have had disastrous results to all sections of the industry; at the present time, there are pretty large stocks of pickled herrings still on hand, and in order to ease the situation the announcement is made that the Government is prepared to consider applications for export licenses.

At the moment the trade in Canadian frozen fish is more or less dormant and is likely to continue so until supplies of fish from home waters — trawled fish — begin to fall off with the approach of winter. Considerable business, however, has been transacted in the recent arrivals of frozen salmon and halibut, prices for steelhead salmon being very firm at the maximum rate permissible under the Fish (Prices) Order. Silverside salmon does not appear to be so much appreciated as steelhead, while the fish being marketed as "fall" salmon is looked at as askance by large numbers of the trade. Demand is expected to remain strong for all best known kinds of frozen salmon marketed in prime condition, and shippers are urged to press for freight for any consignments they are in a position to forward.



General View of Canso, N.S.

The New Brunswick Cold Storage Co., Limited

There are doubtless many interests and industries of the Port of St. John occupying a larger place in the public mind than the New Brunswick Cold Storage, but few have made steadier and more assured progress. The Company was incorporated in 1902. Construction, however, did not start until 1907, just before the financial crisis of that year. The property was opened for business early in 1908, changed hands in 1910, was very considerably added to in 1912 and further extended in 1917. That is the brief history of a business which

fact, plans are now being considered for installing electric power as a substitute and cold weather standby, the idea being that the power requirements may thus be more accurately adjusted to the load from time to time. The present boiler and engine plant is in duplicate throughout. In the power plant department the Company maintain one feature which we believe is unique in Canada—a spray pond of 100,000 gallons capacity for cooling the condensing water. This eliminates both the deterioration which salt water would



1.—The New Brunswick Cold Storage Co., Limited, St. John, N.B., main building, as seen from City Yards; Canadian Pacific Railway Fish Dept., in shadow.

touches the fishing industry at so many angles that no apology is offered for presenting herewith half-tone illustrations of the plant and some interior flashlights of the fish department.

They began with two sharp freezers and 130,000 cu. feet of "dead room" space. Today they have five sharp freezers and have trebled their low temperature storage area, having something over twelve miles of two-inch pipe and mains, hooked up with two sixty ton compressors and one one-hundred-ton absorption plant, the latter being driven with exhaust steam. Two of the sharp freezers operate on brine, the other three on direct expansion. Flexibility has been aimed at throughout in every extension made to the plant; in

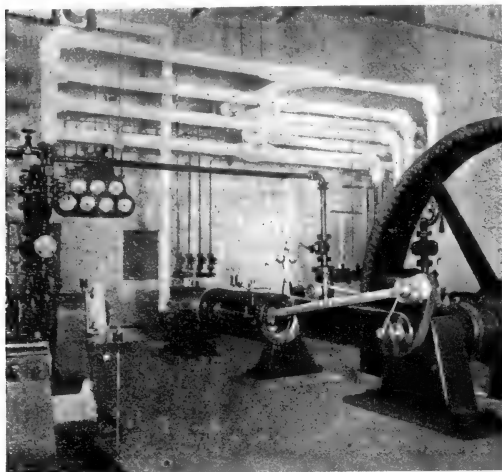
cause and the cost of pumping into a high tower. Also, it adds a picturesque touch to the surroundings, which cannot fail to please.

The property stands in the city freight yards of the Canadian Pacific Railway and has inter-switching with the Canadian Government Railways as well. Construction throughout is of cork board and concrete. Temperatures are readily controlled and in piping the rooms there has been no tendency to risk efficiency as against the installing of ample coils.

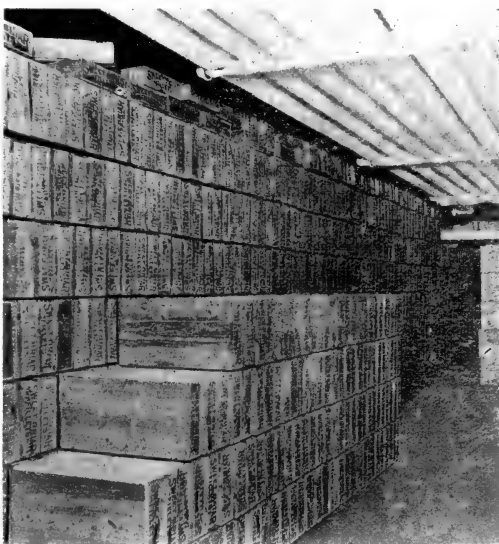
The St. John plant, of course, handles many other lines of refrigerated goods than fish, anything, in fact, except eggs, which are not yet a surplus product in New Brunswick. The Company restricts itself to pure-

ly public warehousing. This feature leaves unrestricted time for clients and has been the keystone of the growth of their trade, many of their largest accounts being attended to wholly by mail and wire, and with and through men personally unknown to them, as yet. The time of those in charge has thus far been too fully

employed to permit of wide travelling, but the hope is indulged by the management that the cuts herewith shown may interest distant customers and that with changed conditions the personal touch may become more general.



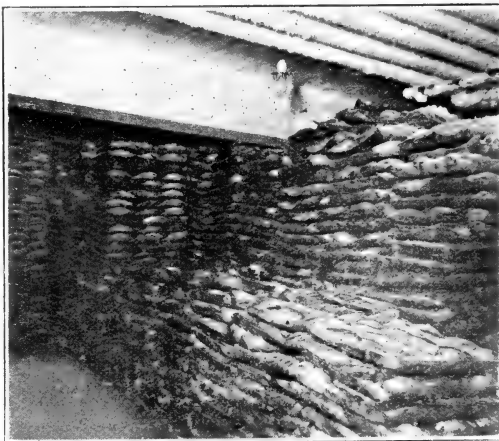
2.—The New Brunswick Cold Storage Co., Limited, St. John, N.B., Interior old Power Station, showing one unit.



4.—The New Brunswick Cold Storage Co., Limited, St. John, N.B. Storage room with smoked fish.



3.—The New Brunswick Cold Storage Co., Limited, St. John, N.B. One of the five sharp freezers, with pans.



5.—The New Brunswick Cold Storage Co., Limited, St. John, N.B. Storage room, showing pan frozen herring, fifty to pan, twenty-five pans high.

RE SHAD FISHERY.

The shad fishery of the Bay of Fundy waters, which was years ago of major importance, has become so seriously depleted that on the 28th of February last a Regulation was adopted prohibiting fishing for shad for the next four years.

It recently transpired that notwithstanding that notice of this Regulation was given at the time, a number of the fishermen in some sections of the upper Bay of Fundy waters did not become aware of it, and

made all their arrangements, including the purchase of nets, for fishing this season, and many of them contemplated putting up sufficient shad for their domestic purposes during the coming winter.

As these fishermen found themselves in a position of hardship, and as the spawning season is now practically over, it has been decided, during the remainder of this fishing season, which will end on the 15th of August, to allow shad fishing in these waters during Wednesday and Thursday of each week.

Sea Fishes of the North Atlantic

By HON. WILLIAM E. MEEHAN.

Former Commissioner of Fisheries of the Commonwealth of Pennsylvania—Superintendent of the Public Aquarium, Philadelphia—Author of Fresh Water Fish Culture in Ponds and Inland Waters—History of Fish, Fishing and Fisheries of Pennsylvania—In Arctic Seas, Part 2—The Battle of the Fishes, Etc.

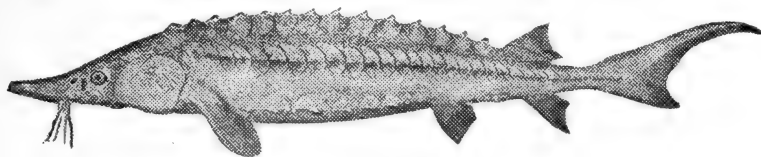
(Continued from the June issue.)

CHAPTER 2.

THE ANCIENT STURGEONS.

Millions of years ago, immediately after the Azoic period or the one in which the earth was formed and solidified and in which there was no life, there came another called the Primary. In this life was found, the earliest and lowest being immovable. Towards the close of the Primary there appeared an age called the Silurian. Here towards the end is found the remains of a group of creatures, apparently developed from the sharks, of a higher order, to which has been given the name Ganoid fishes.

They differed materially from the sharks in structure and were so like the teleosts or true bony fishes, developed in the next or Secondary Period, and its first part or Devonian Age, that scientific men have classed them in that group. The differences between the Ganoid fishes and the teleosts or true bony fishes are of a minor character. One is that in some forms the bones are not all thoroughly calcined and another that the body is covered whole or in part with bony plates instead of scales.



The Sturgeon.

During the Devonian Age, commonly called the Age of fishes, the ganoids had increased to such an extent, both in tribes, genera and species, that they were nearly as numerous as the true bony fishes. But in the succeeding ages, culminating in the Carboniferous, the Age that was particularly disastrous to pre-existing life, the number of tribes, and species rapidly diminished through extinction, until now only a few remain. As an illustration the family of bowfins, one of the earliest of the ganoids and in which at the height of strength numbered more than a hundred species, is now reduced to one species, and that living in fresh water only. Among the survivors of the ganoids are the sturgeons.

Only two or three families of fishes have as ancient or longer ancestry than the sturgeons. Indeed, it is older than that of most of the moveable life in the world, whether aquatic or air breathing. Among those that may have a slightly longer lineage are the gar-pikes and the bowfins, both fresh water fishes.

When the few years of man's existence on this earth is compared with the vast period of time that has elapsed since the first appearance of the sturgeons, there must be a feeling of awe or veneration towards such an ancient tribal history. It is worth considering

something of what the tribe witnessed and passed through.

The creation or development of the sturgeon was probably contemporaneous or nearly so, with that of insects, the first air breathing creatures, and not far, geologically speaking, from the beginning of living things. The family was well along in years when reptiles were created, they were a big family when birds, mammals and deciduous trees came into being. It saw the creation and the extinction of the giant saurians, and although it suffered heavily, it survived the coal bearing period and triumphantly entered the tertiary and modern periods.

Throughout the vast extent of time and the many and awful changes in terrestrial conditions, the sturgeon has changed very little from its original form. The greatest alteration has been in its outer covering. In the earliest period of its existence as now, the sturgeon was an inoffensive creature. It was entirely without means of offence against other living animals. It did not even have teeth. There was given it but one means of defence, namely a complete covering of

heavy bony plates on which the teeth of the many ferocious reptiles, fish and animals had no effect. When in course of ages, the terrible monsters had been wiped out of existence, and there was no further need for the protective armor plate, it was gradually taken from the body of the sturgeon, until now in modern times the mature fish carries but five rows, one down the back, one on each side and one along each ventral line. But there is a curious survival of ancestry in the newly hatched sturgeon, for they have the complete covering of armor plate and carry it until they are over a year old.

The majority of the sturgeons are anadromous fishes or those which make periodical journeys from the sea to fresh water for spawning purposes. When that function is over they usually remain until autumn before returning to their natural element. There are a few species that are of fresh water entirely, but there is reason to believe that at some time in the distant past, the ancestors of these were also anadromous, but that by some convulsion of nature were prevented from returning to the sea, and they and their progeny accommodated themselves to their new environments. Other anadromous fishes have undergone the same

experience, the ouananiche, for example. The original progenitors of this wonderful fresh water game fish of the north were the Atlantic salmon. One of the reasons for believing that the fresh water sturgeons were once sea dwellers is that the sturgeon of the great lakes have found their way out of Lake Ontario and into the Gulf of St. Lawrence where they are frequently found, probably as often as the common sturgeon.

Sturgeon are found in nearly all parts of the northern world, short of the arctics. They are numerous in northern Europe, Asia and America. A curious fact is that the common sturgeon of Europe and America are believed to be identical species. It is curious because apart from the extremely cold water fishes like the cod and halibut, fishes of the same species are rarely found in the two continents unless they have been introduced into one or the other by the agency of man, and such introductions are not always successful because it is a law of nature that when an animal is transferred from one environment to another, sterility is apt to result either at once or in a few generations of the progeny.

Apart from the strays from the Great Lakes, there are but two species of sturgeons along the Atlantic coast, the common and the short nose. The latter is of no commercial importance, for it is very small, seldom exceeding three feet in length, and it is besides scarce, even in the sections where they belong, which is from New York to Virginia.

The common sturgeon grows to a length of nine feet or more, and is without exception the most valuable, individually, known. A six foot female sturgeon with eggs is worth from one hundred and fifty to two hundred dollars. Every part of the body can be used. The flesh, which somewhat resembles beef in appearance and even in taste, is an important article of food. The eggs, after undergoing certain preparations, is the highly prized caviare. From the air bladder can be made isinglass or gelatine, only equalled in quality by the "sounds" of the conner. The gills make an excellent soup and soup is made from the marrow in the backbone. Chinese eat the fins. Ropes and lines of exceptional strength are made from the skin, and the skin also can be converted into a high grade leather. From the head, hide and backbone not otherwise used is extracted a fine quality of oil much sought for by tanners. The refuse after the oil is extracted makes an excellent fertilizer. From the bony plates are made rasps.

The flesh of the sturgeon was not always held in high esteem. Quite the contrary. It was contemptuously characterized by the general public as "nigger food" and few, save the poorest, bought and ate it. As for the spawn, before its value as caviare was appreciated, it was thrown away, excepting such portions as anglers took as bait for fishing. Those same sturgeon eggs are now worth from one hundred and fifty to one hundred and seventy-five dollars a keg. The public was induced to buy and advance the flesh of the sturgeon to the class of a delicacy, through the ingenuity of a man who put it on the market as "Albany beef."

Primitive sharks were all exclusively bottom feeders and rarely came to the surface or strayed far from the bottom, but in course of time, and particularly when the modern sharks came into being, the habits of many changed to free swimming or almost surface dwellers, even though their structure did not change

to conform; but the sharks offshoot, the sturgeon neither changed its habits nor its structure throughout all the changes of the ages. Created a bottom feeder, a bottom feeder it has remained, and it seldom comes to the surface except in sportiveness, and then not even the lordly salmon can outdo it in leaping.

In outward appearance the sturgeon closely follows the lines of its ancestral shark. Even the upward turn of the tail is there. When turned over, the underside also has a shark-like appearance until the mouth is examined. Then the innocent, harmless character of the fish stands revealed. It cannot bite anything, for not only has it no teeth, but it can put no biting strength into its jaws. Around the mouth is a cup shaped organ composed of muscular tissue with which food is picked up by suction and swallowed. Around the mouth are barbels of extreme sensitiveness, and these are used as an aid in both locating and tasting food. In food hunting a sturgeon moves with extreme slowness over the bottom rooting up the sand or mud with its strong sharp snout. The barbels are constantly working and feeling for small crustaceans and soft foods, and when found are gathered up by the sucking mouth. Mud and sand often naturally accompanies the food down the throat of the sturgeon, but apparently without any inconvenience to it.

There is a feeling that the sturgeon is doomed to early extinction. No other sea or anadromous fish has decreased in such a ratio in the last twenty-five years. The greater proportion of the decrease is undoubtedly due to unrestricted fishing for many years, and a habit of fishermen of pursuing a ruthless campaign of destruction against them, before their great value was appreciated, because of the injury they did to their nets. It is not a difficult matter for fish culturists to incubate fertile sturgeon eggs, but little has been done in that direction, because the fish have become so scarce that it is almost impossible to secure ripe females and males at the same time, so as to fertilize the eggs.

CHAPTER 3.

The Mysterious Eel.

Strictly speaking the eel has no rightful place among sea fishes. It belong to one of the anomalous groups that has its natural home in one kind of water, but enters another for the purpose of spawning and can live therein indefinitely. According to exact science the eel belongs to the catadromous fishes, or those which have their natural home in fresh water, but must enter the sea for reproductive purposes. A large number of them, either after reaching the migrating age do not enter fresh water at once, or after spawning,—if they survive that, to them, generally a fatal ordeal,—remain a year or two in the ocean. Because of this and because of a prevalent belief that the eel found in the ocean and the eel found in fresh water are different species, they are described among the sea fishes in this work.

As a matter of fact there is only one species of eel that inhabits the waters of the north Atlantic sea board. The so-called salt water eel and the fresh water eel are identical. The lamprey, which somewhat resembles an eel in outward appearance, and which has been taken for one of the sexes of eel, is not even distantly related to it, or does it, as already pointed out a member of the family of fishes. The conger eel, found more or less abundantly along the coast, be-

longs to an altogether different family of fishes.

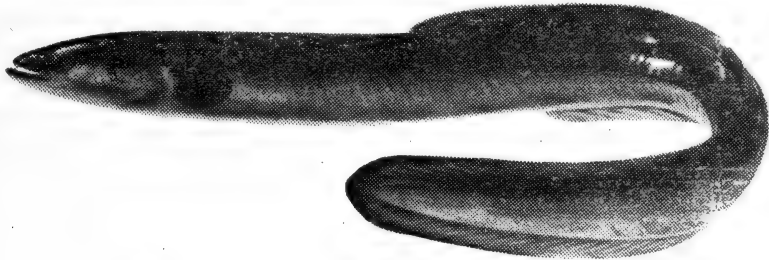
A deep mystery surrounds the lives and habits of many familiar fishes, and the deepest of all, with few exceptions enveloped the life history of the eel for thousands of years. Theories, rank and fantastic, curious and impossible, environed the snake-like fish, and some are still believed, and much of the mystery has not to this day been entirely cleared away by scientific men.

The eel has been both venerated and avoided as poisonous food. Ancient Japanese and Egyptians believed that eating the flesh of the eel was liable to produce leprosy, and the Egyptian priesthood, in order to prevent the people from eating the dangerous flesh, placed it on the list of sacred animals. They covered their real purpose, however, by declaring that the eel was made a sacred fish, because it was one of the symbols of fruitful life, to be venerated and not eaten.

Aristotle, who for centuries was venerated as the greatest of scientific men, declared that eels were sexless, and were produced spontaneously from "the entrails of the sea." Pliny, a Roman scientist of a later day, agreed with Aristotle that eels were without sex, but differed as to the means of reproduction. He held that a mature eel rubbed itself against a submerged rock, and the slime scraped off separated into small

an eminent Italian naturalist, made the discovery that the eel is an egg-laying fish by identifying the female. Nearly one hundred years later, the male was determined. It seems astonishing that the reproductive character of the eel should remain a puzzle for so many centuries; but the explanation is simple. The ovum is so minute as to be scarcely visible to the naked eye even when developed and ready to be deposited and it is also the same color as the fats in the back among which it is embedded. The discovery of the male was delayed for so long because it was naturally sought for among the larger sizes, whereas it is almost as small as a three-year-old eel, rarely exceeding fifteen or eighteen inches in length.

While the ancient Egyptians and other early people looked with terror on the eel as unfit for food, the people of the middle ages regarded it with more favour. It is true that they considered the blood as a virulent poison if a person were inoculated with it, but they averred that the poison was dissipated by heat. They also attributed many beneficent powers to certain portions of the fish. Some believed that the heart of an eel, eaten hot from the body would give the eater the power of prophesy. Others were, and are firmly convinced that the oil of an eel well rubbed in is both a cure and preventative of rheumatism. Even nowadays, boys before going to the "old swimming



The Eel.

particles and became imbued with life as young eels. The ancient Greeks ascribed the paternity of the eel to Jupiter, and in Sardinia, modern fishermen argue that the eel is born of a certain water beetle. There is an early belief that the eel is the offspring of a catfish and a snake. It might be added that occasionally a modern will be found to hold the same conviction.

Nowadays, with a sense of superior knowledge, people smile over the fantastic theories of Aristotle and Pliny and other scholars of a later date, but what they proclaimed was scarcely more grotesque than some of the popular beliefs of the present time as to the origin or life history of the eel. There is a very large contingent for example who firmly believe that eels are produced from the hairs of horses, and these are apt to become heartily offended if their statement to that effect is questioned, because their conviction is sometimes founded on what they thought they actually saw, which was in fact a hair-like parasite fall from a horse into the water and active life. Neither are the ancient theories more absurd than a modern belief that the lamprey is the male of the eel.

Some twelve hundred years after the death of Pliny scientific men began to assert that eels did possess sex, but they held that the young were born alive from the female. It was not until 1777 that Mondini,

hole" tie the skin of an eel around one of their legs to ward off cramps.

About 1850 a manufacturer recalled an old faith, that luck would come to the woman who wore or carried articles made of eel skins, and soon ladies of fashion were possessors of belts, bags and other articles made from the skin of that fish. The fashion, however, was soon precipitously abandoned when someone looked up the legend and made public the fact that the luck referred to was many children.

The true history of the eel is scarcely less interesting than the superstitious and legendary. It comes of an ancient family which dates back to the Devonian period. But there has been in the lapse of time a decided retrogression in the structure of the fish. The modern eel is a degenerate when compared with its early ancestors. Its bony system is much simpler; its ventral fins have disappeared, and it is therefore without legs, so to speak; and its pectoral fins are moving toward a rudimentary form. The scales have been becoming smaller and smaller, until now they are almost microscopic and entirely covered by a thick mucus, making it appear as though they are without scales. The dorsal, caudal and anal fins have all merged into one fin, that extends clear from the front of the back to the anal with the exception of the extreme tip of the tail.

The annual great journey to the sea begins about the middle of August. From every pond and mountain lake, from every brook, stream or waterway, eels warm into the principal rivers and make their sinuous way southward by the millions, all with one common purpose, to reach the mud banks in the shallows of the bay at the mouth of the river, there to spawn.

Some of the vast aggregation do not go on this journey, and the question may well be asked why? The answer is that apparently the stay-at-homes are barren and have not reached the spawning age, and are therefore without the instinct to turn seaward. Only death or capture can prevent the eel, having once started, from completing it and fulfilling its mission. If they meet an obstacle in the river they cannot pass, they do not hesitate to go ashore and go around it by land. Nothing could more forcibly illustrate the great doctrine enunciated by my father, the late Thomas Feehan, before the American Association for the Advancement of Science, some years ago, the "self-sacrifice plays as great and important a part in nature as the 'struggle for existence'." for at the end of the journey death awaits the majority, perhaps all.

The minute eggs of the eel do not develop until brackish water is reached; then ripening begins and it is completed within a few weeks. The number of eggs deposited by a single female is enormous, running into the millions. There is a difference of opinion among scientific men as to what follows when a female has deposited her eggs. Some contend that every one dies, others that while most of them do, a few survive the trying ordeal, basing their belief on a big run of mature eels up river in the spring.

Incubation is a short process. The young, which are rather ribbon-like, make their way far out to sea, where they remain for two years, at the end of one year of that time they take on the form of the mature eel and the following year return shoreward, and make the ascent of fresh water.

The eel holds an important place in the market. It is highly esteemed for food and brings a high price, seldom less than twelve cents a pound wholesale.

CHAPTER 4.

The Flat Fishes.

Throughout the world there are found numerous forms of flat fishes grouped under the name of the Flounder family. It is a big one, for there are 55 genera and about 500 species. From an economic standpoint it is one of five or six most important families known. The ancestry of the flat fishes has not been definitely traced, although it is undoubtedly modern geologically speaking. There is ground for belief that they were not in existence before the Eocene or third period before the present. There is strong difference of opinion as to the origin of the flat fishes, but none is convincing. Some hold that they are an offshoot from the Cods, and others that they branched off from the Mackerels. A few declare that the flat fish is "only a cod fish with a distended cranium." But the structure of the fish does not bear this out.

On account of certain structural differences, the family of flatfishes are divided into three sub-families: The Halibuts, the Flounders and the Turbots. Only one relative of the Turbots, the window pane, is found on the Atlantic coast of North America. The best known of the genera and species met with in the

vicinity of the same region are: The Common Halibut ranging from New York northwardly; the Greenland Halibut, ranging in the Greenland Sea; the Sand Dab or Rough Dab, ranging as far south as Massachusetts; the Summer Flounder or Plaice, ranging from the Carolinas to about Cape Cod; the southern flounder, ranging from the Carolinas, southwardly; the Gulf Flounder, South Atlantic and the Gulf of Mexico; the Four Spotted Flounder, from the southern New England coast northwardly; the Window Pane, from Cape Cod southwardly; Rusty Dab, from New York to Labrador; the Winter Flounder, from the Carolinas to Labrador; the Hog Choker from Cape Cod to Texas; the Eel-back Flounder, from Cape Cod to Labrador; Pale Flounder, from Cape Cod northwardly.

All these after the first few days of life generally swim on one side, and for the remainder of their lives all or nearly all have both eyes on one side of the head. They are without air bladders and, therefore being of greater specific gravity than the water, cannot maintain themselves in suspension without exertion. It is impossible for all excepting possibly one species, for them to keep upright because of a peculiar position and structure of the paired fins. One side of the flounders is called the bottom and the other the top. The former is usually white and the latter dark color. In some genera the bottom is on the right side, in others on the left, and in a few it is either right or left; the eyes naturally are on the top side.

A young Flounder, when first hatched, is translucent. It swims in an upright position, has the eyes on both sides of the head, and the mouth in a normal position. In a few days, however, by rapid degrees the young fish begins to lean to the left or right, as the case may be, and finally assumes the position of the mature fish. In the meantime, the eye on the under side begins to move over to the upper, a course made possible by the then cartilaginous character of the skull. The change takes place in the short period of three days. Simultaneously with the migration of the eye, the mouth and head twists out of shape in most of the species until it reaches the position it is to hold for the remainder of its life.

With few exceptions all members of the Flounder family hold a high rank as food, and millions of pounds are consumed annually. Some species are pronounced unequalled for the delicacy and sweetness of their flesh. The European Sole and Turbot are world renowned in this respect, while epicures declare the American Winter Flounder equal to the English Sole, and the Summer Flounder is often entered on the menus of high class restaurants as Turbot, and as such eaten and enjoyed by the patrons.

Flounders were highly esteemed by the ancients. According to legendary lore, the fish was once white on both sides. Then one day, according to this venerable uncertain authority, Moses, the great Hebrew law-giver and leader, went fishing, caught a Flounder and started to cook it. When one side was nicely browned, the fire became suddenly extinguished, and no more being immediately available, that great man, much disgusted, seized the partly cooked fish and tossed it into the sea. Although half-cooked, the fish was not dead and speedily recovered from the dreadful experience. However, it never lost the brown color on one side which resulted from the cooking, and its descendants have retained it.

With few exceptions, all flounders are exclusively carnivorous. Occasionally a species like the winter

flounder will eat sea-weed, but the chief foods are crustaceans, mollusks, small fish, blood worms and shrimps.

All species bite freely on the hook, and several of these along the coast of the United States afford much pleasure to anglers. None of the family has sufficient fighting qualities to be termed a game fish. The shape, fins and general structure forbids other than a heavy pull on a line.

Common Halibut.

One of the best and most important of food fishes, the Common Halibut, is a dweller in cold water only. It delights in a temperature about the freezing point, and will not remain in a locality where it rises more than ten degrees above. Hence it is rarely found and then only in the winter, as far south as New York State. At times the Halibut will venture into shoal water, but its preference and general abiding place is on and beyond the Great Banks where the water is from 200 to 300 fathoms deep.

The Halibut is a huge fish, one of the four or five of the largest known. It is equalled or exceeded only by the Sword Fish, the Tarpon, Tuna, and one or two others. Specimens weighing over four hundred pounds have been caught, and between two hundred and fifty and three hundred pounds are very common. The huge sized Halibuts are all females; the male rarely exceeds a weight of fifty pounds.

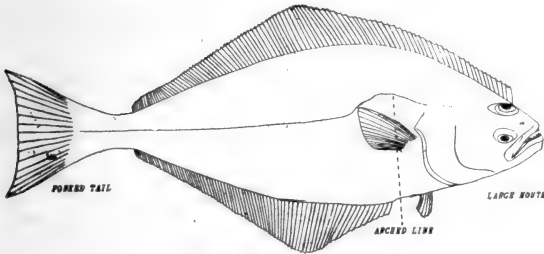
In the Halibut, the eyes are usually on the right side,

cial fishermen when on the Banks catch both Cod and Halibut indiscriminately.

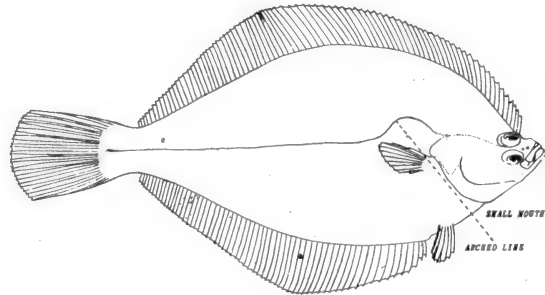
When a Halibut attacks a large cod, it does so in a manner peculiar to itself. Approaching swiftly, if awkwardly, it gives the Cod a heavy blow on the head with its tail, and follows this up by other on different parts of the body with amazing swiftness, until the Cod succumbs from weakness, and allows itself to be devoured. It is stated that when making an attack of this kind, the Halibut will even follow the Cod into shallow water, and becomes so oblivious of its surroundings that it fails to pay any attention to a chance proximity of man.

The spawning season of Halibut is in some doubt. If reports made at different times and places by various fishermen are accepted, Halibut have no set period for performing that function, for gravid females are said to be found in almost every month of the year. The ovaries are huge, sometimes exceeding two feet in length, and having a weight of over fifty pounds. They contain a vast number of eggs, estimates made set the number at over 2,000,000.

Halibut fishing is not a sport. Few persons are likely to go after the fish for the fun of it. While much of the Halibut fishing is done with hook and line, by commercial fishermen, it is almost invariably in very deep water and in winter. Both the great length of line, often over 1,200 feet and the freezing weather, with the inevitable wetting, must necessarily destroy all pleasure. Moreover, the actions of the Halibut it-



Halibut.



Dab.

although occasionally they are on the left. The upper or top side is a dark brown, and once in a while, with dark spots near the dorsal line. The lateral line is distinct and extends in a straight line to the extreme edge of the right pectoral fin, where it ends upward sharply to a little above the medial line of eyes, then bends downward to the back of the head above the gill covers. The head is not as much distorted as in some flat fishes, and the mouth is large and well filled with sharp teeth.

Having a large mouth and sharp teeth, the Halibut is naturally an extremely voracious fish, and very active in pursuit of its prey, notwithstanding its abnormal position. Its chief foods are lobsters, squids, fish, and in fact any animal life that it can catch. A fair sized Halibut can devour an incredible number of aquatic creatures. It is said that as much as half a bushel of unfortunates have been taken from the stomach of one of these large flat fishes.

Halibut are specially fond of whiting, mackerel, herring and cod, and it is said that its rapacity and aggressiveness will drive away schools of all kinds of fish from their feeding grounds, excepting Cod. Apparently the Cod hold their ground, for the commer-

self when hooked does not compensate either for the long wearisome hauling of the line, either by winch or hand, or for the weather discomforts.

One who has tried it thus describes Halibut fishing: "With the hook perhaps six hundred feet below the plunging, rocking boat, there comes a powerful tug on the line, and presently it will get so light as to induce the belief that the fish has been lost; then again it feels heavy; this time we know it is a Halibut, and it has to be hauled very carefully to the surface and knocked on the head before it can be taken into the boat."

The name Halibut is of Scandinavian origin, and it is made up of two words, meaning deep sea flounder or flat fish. Curiously, and very much out of the ordinary rule, the common name is the same almost everywhere, with only trifling exceptions. In England it is often called Holibut; in Germany it is Heilbutt; in Holland, Heilbot; and in Sweden, it is Halleflundra.

Sand Dab.

The Sand Dab, sometimes called Rough Dab, like the Halibut, is a northern fish, not being found south of Massachusetts, excepting as a stray. It belongs to

the same genus as the Halibut, and is a favorite fish among New England and more northern anglers, who fish for them during the winter months, and in much the same manner as those along the New York and New Jersey coast do for winter flounders.

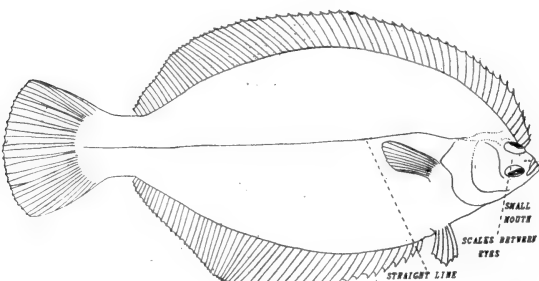
From October to April, Sand Dabs frequent the bays and inlets, but with the first rise in temperature they scurry to where the water is one hundred and fifty feet deep and more. In outline the Sand Dab is similar to Winter Flounder, and its eyes are on the right side of its head; but its mouth, instead of being small, like that fish, is quite large and fitted with a single row of sharp teeth. The color of the top is a uniform reddish brown.

Although its chief foods are crustaceans, the Sand Dab is a voracious feeder on small fish, which they chase with some activity. Hence a piece of fish with the flesh side up is a favorite bait among anglers.

The Sand Dab grows to be about two feet long, and reaches a weight of from three to five pounds. Its flesh is delicate and highly esteemed both in this country and abroad where the same fish is found in abundance on the English coast and in Scandinavia.

Rusty Dab.

The Rusty Dab, is a small species found in abundance from New York to Labrador and beyond. It averages a trifle smaller than the Winter Flounder, but it is nevertheless highly prized for its delicate food qualities. It is often seen in the New York and Boston markets mixed with the Winter Flounder from which it can easily be distinguished. Its color is brownish, plentifully sprinkled with rusty spots on the upper side, hence its name Rusty Dab. The eyes, which are on the right side, are close together, and the snout projects abruptly upwards. The lateral line is straight from the tail to the extremity of the upper pectoral fin, where it sweeps upward in nearly a perfect curve to the medial line of the eyes. The mouth is large and furnished with small teeth.



Flounder.

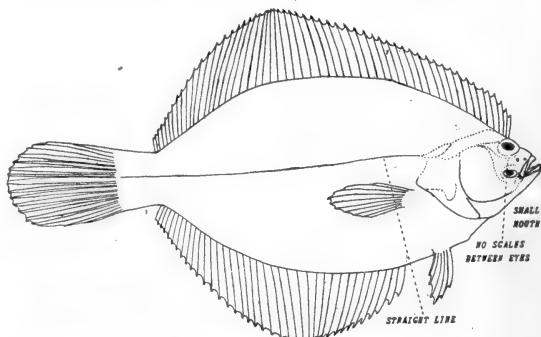
Eel-Back Flounder.

There is very little literature on the subject of the Eel-Back Flounder, although it is often seen in northern markets, and is esteemed as a delicacy for the table. There is only one other member of the genus and it is an inhabitant of the arctic exclusively. The Eel-Back itself is not found below Cape Cod and is one of the smallest of the Flounders, rarely exceeding a foot in length. It is distinguished by a rough ridge above the gill cover, is dark grey with numerous dark mottles on the upper side, and with black spots on the fins. The eyes are on the left side, the head is not much twisted, and the lateral line, plainly visible, is

almost straight from the tail to the medial line of the eyes. The scales are very small and so closely set that the back feels soft and smooth, somewhat like the skin of an eel.

Pale Flounder or Craig Fluke.

The Pale Flounder or Craig Fluke is another far northern species having Cape Cod as its southern limit.



Smooth Flounder.

Being a lover of cold, it rarely ventures into shoals for very long, but remains almost constantly in deeper water.

Like the Rusty Dab, it is a small fish, rarely attaining a length of eighteen inches, usually not more than a foot. By many it is considered equal in flavor to the famous English Sole. It is grayish brown in color, with numerous dark spots on the fins, and with dusky tipped pectorals.

Window-Pane Turbot.

For a time it was thought there was a possibility that the famous European Turbot existed in North American waters, and there were some who insisted that they were present and blamed American methods of fishing for not locating them. But the most persistent search with every known appliance failed, and scientific men are emphatic in their conviction that the European Turbot is not found among the American flatfishes. Their conviction is strengthened by the fact, that on several occasions the United States Government deposited specimens of European Turbot along the coast, but nothing was ever seen of them afterward, apparently demonstrating that conditions are not suited to the fish.

Years ago the Common or Summer Flounder was sold in certain northern markets as Turbot, accepted and eaten as such, and early visitors from abroad undoubtedly believed, when the Summer Flounder was set before them, that it was Turbot, as told them. As a matter of fact, as already stated, there is but one representative of the European Turbot in North America, namely, the Window-Pane Turbot, sometimes called the Spotted Sand Flounder, the Water Flounder, and Daylight. The name Window-Pane and Daylight is on account of the remarkable thinness of the fish, and its extreme translucence. It is so thin and translucent, that on being held up to a strong light, the shadow of a solid object on the other side can be faintly seen.

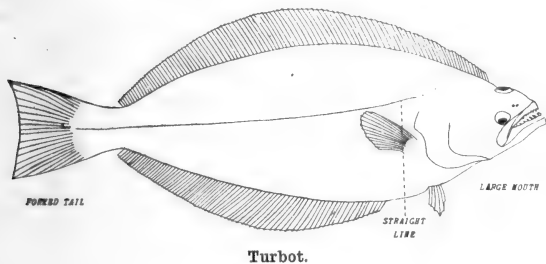
Although a close relative of the European Turbot, its flesh is decidedly inferior, although it is by no means to be despised. Moreover, it is so small that there is very little flesh, and for that reason is scarcely worth the trouble of preparing it for the table. The

range of the Window-Pane is from Northern New England to North Carolina, and is quite common along the coast. It is an attractive little fish, grayish brown on the upper side, with an abundance of spots and mottles even on the fins. The first eight or ten rays of the dorsal are higher than those immediately behind, and are more or less filamented. The eyes are on the left side, and rather wide apart. The mouth is large, and the lateral line while plain is thin and sickle shaped.

Winter Flounder.

In the family of flounders is a tribe upon which has been bestowed the elegant English name of Bastard Halibut, and the scientific name of Paralichthys. One of the most important of these on the Atlantic Coast, is the Winter Flounder. It is a small fish having a maximum length of less than two feet, usually not more than twelve to fifteen inches, and an average weight of from half a pound to two pounds, although it is said that occasionally one is caught that weighs five pounds.

What the Winter Flounder lacks in length and weight, it makes up in abundance. The shallow bays and harbors of the Atlantic swarm with them from the Chesapeake to Labrador, and catching them for the market is an important winter and early spring industry.



It is a curious illustration of the influence of the old saying, "What's in a name?" that many people who go into raptures over "fillet de sole" in a first class restaurant often do not encourage the same fish in their household under the more homely name of flounder. However, whether the fish may be called Sole, Winter Flounder, or Mud-dab, there are few fish that equal it for delicacy of flavor, or whiteness and firmness of flesh.

The Winter Flounder is an American fish, not found in Europe, although it is very closely related to the English Fluke. It is no traveler, and finding a bay or harbor to its liking settles there or in the neighborhood indefinitely. In some localities they will even bite on a hook throughout the summer, but it is from October to May that they are at their best in this respect.

The Winter Flounder is an unobtrusive fish, never rising to the surface in pursuit of its prey, but sticks close to the bottom, moving sometimes slowly, sometimes rapidly, capturing and swallowing food which comes its way. As its mouth is very small, it can eat small creatures only or those which it can tear apart easily with its sharp slender teeth. Its favorite foods are tiny crabs, small crustaceans, blood worms, shrimps, and even pieces of sea-weed.

When not in motion, the Winter Flounder loves to partly bury itself in the sand or mud with its flat back,

head, eyes and mouth protruding. Resting thus, it is almost impossible for anyone to distinguish anything excepting the two little beady eyes, on account of the color of the back being almost the same as the surrounding bottom. Winter Flounders settle themselves says Dr. Goode, "by convulsive motions of the fins and body, which has the effect of pushing them down into the soft bottom."

Winter Flounders begin to spawn about February, and that important function is usually not completed until the beginning of April. Sometimes it is later, for I have found well developed and perfectly good spawn and milt in the fish as late as the first of May.

The fish are very prolific; a single female will yield a million or more eggs. Development is rapid, and the young are at least half an inch long by June, and an inch and a half by September. In a year it will make a growth of about five inches.

One of the marked differences between the Winter and the Summer Flounder is that the migrating eye of the former is the left, while that of the latter is the right, so that at the time of complete change the Winter Flounder has both eyes on the right side of the head, while the Summer Flounder has them on the left.

The Winter Flounder is elliptical in shape, and the color of the upper side is a rusty olivaceous brown, with very indistinct irregular splotches of a slightly darker color. The under side, including the blind side of the head is white and smooth.

At low water, the Winter Flounders congregate in the shallow channels, but as soon as the tide rises they scatter over the flats and bars. As they are incessant feeders they may be caught with the hook and line at all stages of the tide, the angler merely shifting position with their movements. While they bite at almost any time of the day, it is at high water slack and near the ebb that they do so with the greatest avidity.

There is little or no game in the Winter Flounder. When hooked it is hauled to the boat with very little resistance. Because of this, many fishermen, who use a rod altogether when after other fish, employ a couple of hand-lines. Nevertheless there is more enjoyment in the use of the rod for this fishing, although, on account of the peculiar methods of the fish in taking the bait, the users of the hand-lines may, in most instances, catch the most fish.

A Winter Flounder does not take its bait with a snap and a gulp like the Summer Flounder, but picks it up daintily and sucks it into the mouth. All this is done so gently that the fisherman has no conception that a fish is anywhere near, and as the flounder after swallowing the bait often lies still for some time, the angler might think it a long while between bites unless he raised his line from the bottom with a slight jerk every few minutes.

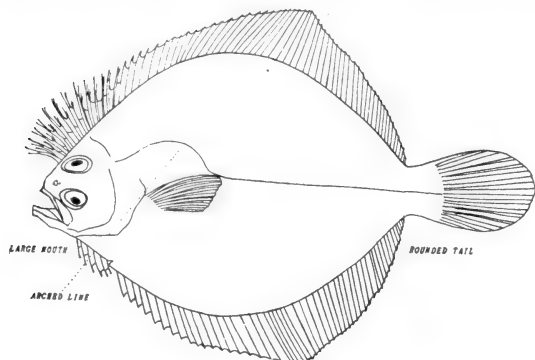
As the fish moves about from one place to another erratically, and eats only very small creatures, it is the practice of the fishermen after anchoring, to stir up the bottom alongside of the boat from bow to stern with oyster or clam tongs. This releases the small crustaceans and other foods in the sand and mud. It also creates a roil which the flounders see and make for, knowing that in it there is something to eat. The fisherman drops his hooks in the roil and thereby usually increases the size of his catch.

Hooks for Winter Flounders fishing must be very small, not larger than number four, nor smaller than

number six New York Trout, or similarly numbered other patterns. Two hooks may be used, one at the end of a three-foot leader, and the other seven or eight inches above. The sinker, which is fastened at the junction of the line and leader, need not be heavier than three ounces for slack water, and four ounces for tide. If the line is very thin, the weight of the sinker may be reduced by an ounce.

A short, light fresh water bait casting rod will yield the most sport. The best baits are small pieces of clam or mussel, or pieces of blood worm. Fragments of angle worms are also taking baits.

There is one annoying feature of Winter Flounder fishing, and that is the depredations of sand or lady



Sand Flounder.

crabs. The stirring up of the bottom to make a roil sets these pests free along with the food, and they make straightway for the tid-bits on the hooks. Sometimes the crabs are so numerous that they scarcely give the fish a chance to bite.

Summer and Southern Flounders or Plaice.

From a commercial standpoint the Summer and Southern Flounders or Plaice are the most important food fishes in American waters with the exception of the Halibut. Their excellence as food, and the low price at which they are usually quoted render them popular with consumers, and an incredible number of tons are caught annually and sold in the markets from Maine to Florida and New Orleans.

The two species resemble each other so closely that it is difficult to distinguish them by a cursory glance. The chief differences are technical. The Summer flounder is a brownish olive in the left or upper side, with numerous small white spots on the body and ventral fins, and sometimes a series of large white spots along the bases of the dorsal and anal fins, and about 14 ocellated dark spots on the body. The eyes are on the left side of the head and rather close together, and the mouth is large with many sharp teeth. The lateral line is faint and straight for about only half the length of the body forward of the caudal from where it progresses to the head in a wave form. It is on account of its teeth that the specific name *dentatus* is given. The generic name is *Paralichthys*, meaning parallel fish.

The Southern Flounder is dusky olive and nearly plain, that is without spots, hence its specific name *lethestigma*. As with the Summer Flounder, the eyes are small and on the left side of the head, but they are rather wide apart.

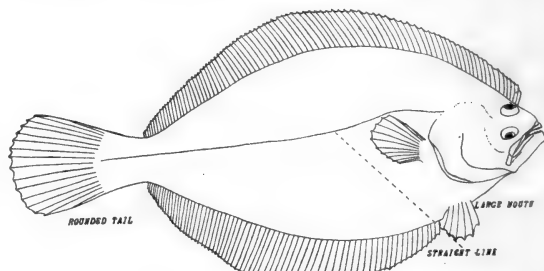
The two species, under the name Plaice, were among

the first sea fishes with which the early colonists became acquainted. Curiously it was a well known market fish before the attention of scientific men was drawn to them. Finally in 1766, a Dr. Garden of South Carolina sent specimens to Linnaeus, who described and named the Plaice. The fish had a special scientific interest and value because of its being a new genus and without representation in European waters, and for many years it was believed to be nowhere else than along the Atlantic coast of North America. Later, however, representatives were found in the Pacific not only on the American side, but along the coast of Japan and China as well.

Besides the name Summer Flounder and Plaice, the fish is known as Fluke, Brail, Puckermouth, Deep Sea Flounder, Turbot Flounder and Chicken Halibut. The last is chiefly a restaurant name when served as young Halibut.

The migrations of the Summer Flounders are with great regularity. About the middle of May, shortly after Sea Bass commence biting, they begin coming into the bays and inlets, and into the breakers along the shore. By the middle of June the shoal waters swarm with them, and with the coming of cool weather—the latter part of September—they begin to depart. In a week or two they are all gone excepting some tardy ones, these seem to become benumbed and occasionally an oysterman will pick one up with his tongs. When he does the fish comes to the surface as if dead, making not the slightest effort to escape. The Southern Flounder is not so pronouncedly migratory, for they are found inshore all the year.

While in shore, the Summer Flounder is found in from four to one hundred and fifty feet of water. The favorite haunts in the bays and inlets are where the bottom is muddy or grassy and on the sandy shallows. Both the Summer and Southern Flounder often bury themselves until only their backs and eyes are above



Plaice.

the mud or sand line, awaiting the coming of food, but this is not an invariable habit, frequently they swim actively about and pursue their prey, coming to the surface and sometimes leaping out of the water. Notwithstanding the ungainly appearance of the fish, the abnormal position of the fins and other apparent drawbacks, the movements of both the Summer and Southern Flounders are very rapid and their agility is surprising.

The Flounder is not a "school" fish in the same sense as the Mackerel, Herring and many other fishes, yet vast numbers are to be found together, and this gregarious habit is probably due to the fact that the fish are more or less continuously on the move in search of food.

Both species grow to a large size. Specimens from

fifteen to twenty-six pounds have been recorded; but it is seldom that one is caught weighing over ten pounds. The average weight is about two and one-half pounds. The Flounder is one of the fishes the weight of which can be closely determined by its length. One measuring fifteen inches in length will weigh about a pound; one of fifteen or sixteen inches about a pound and a quarter; one of seventeen to eighteen inches, about two pounds; one of twenty inches, about three pounds; one of twenty-two inches, about four pounds; one of twenty-seven inches, about eight pounds; and one of thirty inches about ten pounds.

Flounder fishing is good sport. While not as pronouncedly "game" as many other fishes, they display great activity, and put up a lively fight to the very last, and if not handled carefully may break away from the hook.

One gratifying feature about Flounder fishing is that no account has to be taken of the condition of the tide. Flounders bite with equal vigor at all stages, and during the season it is generally incumbent on the angler merely to find where the fish are to ensure a good catch without long and irregular waits.

Flounder fishing may be done by casting in the surf or from a row boat; by still fishing or by drifting. The last, in many respects affords the greatest amount of pleasure. Often in New Jersey, fishermen employ, what, if they were in a boat would be drifting, by walking slowly across a trestle, dragging a line after them.

Of the several methods of rigging for Plaice, the most desirable seems to be to fasten a sinker at the lower end of a three-foot twisted gut leader, with one four-ought or five-ought hook about six inches above, and another the same distance below the other end. The sinker must be heavy enough to keep to the bottom, and not lifted by the run of the tide. Sometimes where there is much floating sea-weed, it is better to use a six-foot leader instead of one three-foot long, in which case the second or upper hook had better be fastened about two feet above the lower. By doing this the weed is more apt to fasten to the line and keep free of the hooks, especially if, as should always be done, there is kept out from forty to fifty feet of line in shoal water, and proportionately more in deep water.

Live bait, or dead fish, cut into strips make the best bait, although clams are greedily taken. Unfortunately small sea bass and black fish are passionately fond of clam bait, and cause so much annoyance by stripping the hooks, that many fishermen will not use it.

Drifting is done usually in a row boat, and it is well if the fisherman is alone, to have the anchor beside him, so that when he gets a strike, he can drop the anchor overboard and bring himself to a halt while he lands the fish. The line also should be fastened to the side, and only enough allowed to follow the anchor to allow it to reach the bottom and hold firmly. If this is done, however, care must be exercised to prevent the fish from wrapping itself around the anchor rope.

Four Spotted Flounder.

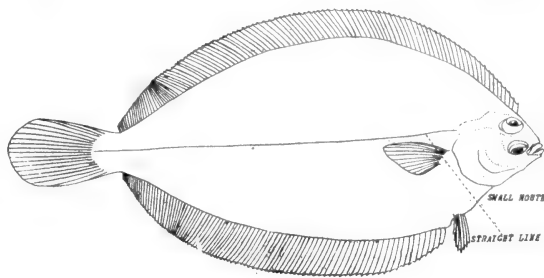
There are three flounders that pass by the name of Four Spotted Flounder. One is found more or less commonly from Cape Cod to New Jersey. A second and third are from Virginia southwardly. All are good food fishes and both desirable from both anglers' and

commercial fishermen's standpoint. Both bite freely on a line and fight with the same vim as the summer flounder, although not as long, for both are smaller fish.

The northern form has a long gracefully shaped body, totally unlike most of the rest of the tribe. The dorsal and anal fins are of uniform height throughout; the eyes are large, set close together, and on the left side of the head. Its large mouth is well supplied with long sharp teeth. The upper side of the body is a dark olive brown with four large black spots (called ocelli) surrounded by a broad circle of pinkish white.

Hog Choker.

One of the famous British fishes is the sole, and Englishmen who come to America and Americans who visit Europe are fond of expatiating on its exquisite flavor and wishing the fish were in American waters. The English sole is not here, although the winter flounder is not far behind it in toothsome qualities.



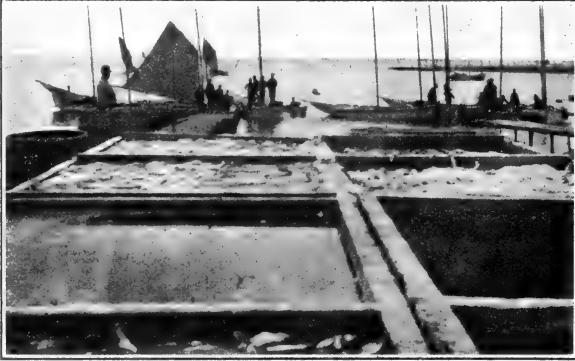
Sole.

There is, however, an American representative of the sole, such as it is. Unfortunately it does not hold up the high reputation of its English relative. It is called the hog choker and its flesh is generally considered worthless for food. It is said to be so bad that a hog will choke if it attempts to swallow one; hence its name, hog choker. It is a small fish seldom exceeding a quarter of a pound, nearly round, olive brown on the back and marked with black streaks and thickly dotted on the underside with round dark spots. It abounds as far as Cape Cod and found even farther north. The Hog Choker can stand living in fresh water and frequently ascend rivers in the spring within tide water, and remains until autumn.

Greenland Turbot.

Although purely an arctic fish and found most abundantly off the coast of Greenland, the Greenland Turbot, or Little Halibut, is marketed almost exclusively in markets of the Dominion of Canada, the New England and New York markets. In all, save the last named, it is an important fish.

Very little is known of its habits, but the little that is known shows it to be one of the most remarkable of all the flat fishes. Its favorite abiding place is in water from one hundred to nearly three hundred fathoms. It is more symmetrical than most of the flat fishes, and is colored on both sides of the body. From these two facts and further that it is often found on submerged slopes so steep that the fish can scarcely hold its place on the bottom, it is deduced that its movements are more like those of the ordinary fishes and that it can rest with the body in a vertical position.



Port Elgin, N.S.—Plant of Yarmouth Trading Co., Ltd., Yarmouth, N.S.

Northport, N.S.—Plant of Yarmouth Trading Co., Ltd.



YARMOUTH.

The headquarters for deep-sea fishing and the lobster trade along the southern shore of the Bay of Fundy is Yarmouth.

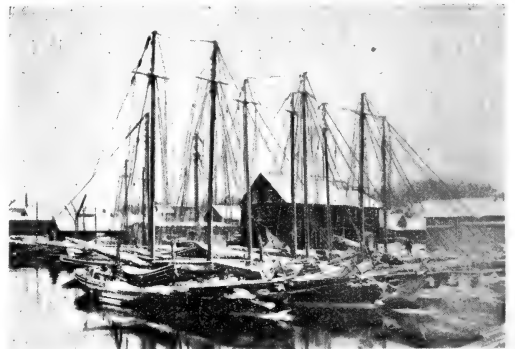
Yarmouth is the nearest port in Nova Scotia to the United States and it is only natural that much of the fish caught on the southwest shore should be shipped from Yarmouth. More than 1,500 people in this district are dependent for their living on the fisheries. The firm engaged in the industry are the Yarmouth Trading Co., Ltd., Mr. E. B. Ehr Gott, manager, which deals in dried and pickled fish exclusively. The company also have curing plants at Port Elgin and Northport. Their new warehouse is one of the most up-to-

date on the continent being equipped with mechanical means for drying fish by means of hot air.

H. S. Amiro, established in 1914, has 4 schooners engaged in the business and does an extensive business in the West Indies and South America in pickled fish. The wharf connected with this plant is 450 x 100 feet.

The Gateway Fish Co., Ltd., Mr. J. M. Walker, manager, occupy a wharf 50 x 450, and have a fleet composed of three schooners and a number of small boats. The company deals in fresh and pickled fish only, shipping chiefly to Boston and Gloucester.

The Consumers Fish and Cold Storage Co., Ltd., Mr.



Yarmouth Trading Co.—Fleet at Liverpool, N.S.

This can only be done by installing a good FISH BOX for storage of same.



We can build them
CHEAPER, but
we won't. We
would build them
BETTER, but we
can't.

Manufactured by :

Tel. Up. 8547.

A large, complex mechanical device, likely a steam engine or pump, mounted on a heavy metal frame. It features a horizontal cylinder, various pipes, valves, and a large flywheel on the right side. The device is supported by a sturdy A-frame structure.

Knapp Labelling Machine

E. A. EARL & CO., Vancouver, B.C., Agents

A.	Acadia Gas Engines, Ltd.	99	Freeman and Cobb Co. Inc.	57	Noble, Charles, Jr. Co., Inc.	94
	American Can. Co.	57	Freeman, W. A. Co.	83	Northern Fish Co.	80
	Armstrong Independent Fisheries, Ltd.	82	Fromm, F. H. & Co.	80	Nova Scotia Government	86
B.			C.		O.	
Bliss, E. W. Co.	67	Goodrich, B. F. Co., Ltd.	63	Ontario Government	93	
Booth Fisheries Co. of Canada, Ltd.	60	Gourock Ropework Export Co., Ltd.	83	O'Connor's Fish Market	93	
Bowman, J.	96	Gosse-Miller Packing Co., Ltd.	78			
Brandram Henderson Co., Ltd.	96	Gray and Prior Machine Co.	93	F.		
British Columbia Government	12	Guarantee Motor Co.	8	Pitt, Fishmonger	93	
British Columbia Packers' Association	14	Guest, W. J., Fish Co. Ltd.	89	Polson Iron Works	88	
Brown Borge, Ltd.	53	Gulowen, Grei, Engine Co.	75	Process Engineers, Ltd.	89	
Brown Engineering Corporation, Ltd.	81	H.		Q.		
Burnell Engine Co.	82	Hatton, D. Co.	17	Quebec Government	92	
Burns, P. & Co.	81	Hoover & Son, A.	77	R.		
C.		Hyde Windlass Co.	59	Ranney Fish Co.	94	
Caille Perfection Motor Co.	79	I.	Independent Rubber Co., Ltd.	98	Robbins, Chas. C., Inc.	96
Canada Metal Co., Ltd.	78	J.		Robbins, F. R. & Co.	76	
Canadian-Fairbanks-Morse Co., Ltd.	20	Jacobson Gas Engine Co.	93	Robin, Jones and Whitman, Ltd.	93	
Canadian Fish and Cold Storage Co., Ltd.	11	James, F. T., Co., Ltd.	97	Robinson, Thomas	85	
Canadian Fishing Co., Ltd.	15	K.		S.		
Canadian Ice Machine Co.	88	Kildala Packing Co., Ltd.	5	Seaboard Trading Co.	37	
Canadian Milk Products, Ltd. 1 & 2	7	L.		Schmidt, B. L. C.	81	
Canadian Oil Co., Ltd.	8	Leckie, John, Ltd.	18	Scythes & Co., Ltd.	57	
Canadian Pearl Button Co., Ltd.	89	Leonard Fisheries, Ltd. Back Cover		Silver, H. R., Ltd.	86	
Connors' Brothers, Ltd.	72	Letson and Burpee, Ltd.	6	Smith Cannery Machines Co., Ltd.	16	
Consumers Cordage Co., Ltd.	73	Lincoln, Willey and Co., Inc.	85	Stamford Foundry Co.	73	
Cutting and Washington	73	Linde Canadian Refrigeration Co., Ltd.	68	Standard Gas Engine Co.	14	
D.		Lipsett, Cunningham and Co. Ltd.	3	Stairs, Son & Morrow, Ltd., Wm.	61	
Danto & Co.	13	Lipsett, Edward	3	Spooner, W. R.	73	
Dept. of Naval Service	4	Lockport Cold Storage Co., Ltd.	2	T.		
DesBrisay, M., and Co., Ltd.	88	Loggie, W. Co.	81	Tabor, Geo., Ltd.	93	
Dominion Fisheries, Ltd.	88	London and Petrolia Barrel Co., Ltd.	34	Taylor, Robt. Co., Ltd.	73	
E.		Lyons, Chas. Co., Inc.	68	Tower Canadian	8	
Eureka Refrigerator Co.	94	M.		Tuckett Tobacco Co., Ltd.	68	
Evinrude Motor Co.	88	Marconi Wireless	77	V.		
F.		Maritime Fish Corporation, Ltd.	91	Vhay Fisheries Co.	65	
Farquhar and Co., Ltd.	87	McAvity, T. & Sons, Ltd.	94	W.		
Finklestein, Max.	76	Miner Rubber Co., Ltd.	70 & 71	Walker, Thos. and Son, Ltd.	93	
Finlay Fish Co., Inc.	85	Matthews-Blackwell, Ltd.	69	Wallace Fisheries, Ltd.	10	
Fish Trades Gazette	76	Mueller, Charles, Co., Ltd.	84	Wannenwetsch & Co.	87	
Foreman Motor and Machine Co., Ltd.	87	Mustad, O., and Son.	7	Western Packers, Ltd.	9	
Forke, Peter	84	N.		White and Co., Ltd.	98	
		National Refining Co.	7	Whitman, Arthur N., Ltd.	98	
		New Brunswick Cold Storage Co., Ltd.	77			
		New England Fish Company, Ltd.	15			

G. R. Earl, manager, in addition to other plants at Yarmouth, has branches at Barrington Passage, Shelburne and Liverpool. The Yarmouth Fishing Co., Ltd., own 3 schooners specially adapted to fresh fish business. The "Yafico" is engaged in sword-fishing and has shown that there are large possibilities for development in this branch of the industry.

The New York and Yarmouth Fish Co., Ltd., Mr. C. H. How, manager, have 5 schooners and deal in fresh and salt fish.

S. Epstein has a growing business mostly in fresh fish. Parker-Eakins Co., Ltd., do considerable business in dried fish and fisheries supplies and Nickerson,

Prior, Ltd., are also engaged in the fresh fish business mainly with the Boston market.

It must also be remembered that Yarmouth is also a centre for the clam, oyster and lobster trade of south-western Nova Scotia. In this district are located lobster packing houses whose shipments of fresh lobsters reach a value exceeding \$500,000. The canned lobsters of Yarmouth and Shelburne totalled in 1916 over 30,000 cases, valued at \$600,000.



Gateway Fishing Co., Ltd.



"Eleanor S."—Yarmouth Fishing Co., Ltd.



Plant of the Consumers Fish & Cold Storage Co., Ltd.,
Yarmouth, N.S.



"Dorothy Earl."—Yarmouth Fishing Co., Ltd.



All ready for Sword-fishing.—The "Yafico" owned by
Yarmouth Fishing Co., Ltd., Yarmouth, N.S.



C A N A D A

Fish Producers and Distributors

The Dominion Government, through the Food Controller's Office, has inaugurated a campaign to increase the consumption of Fish. This is being supported by an aggressive campaign of advertising — all to the one end — the increased use of Fish as a food.

To the Producer---

Get behind this campaign. Lend your aid and see that the distributor gets enough fish. Be sure your fish is packed right, and that it gets to the proper market in proper condition.

To the Wholesaler---

Largely upon you rests the success of this campaign. See that you have the supply necessary to support the demand. Co-operation on your part means much. The Government has provided improved boxes for the keeping and displaying of fish. See that the dealers get them. Show them how to use them. Urge the dealers to be satisfied with a reasonable profit and give their customers a satisfactory service. It all means better and bigger business for you and them.

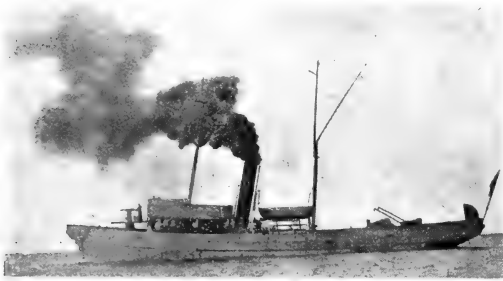
To the Retailer---

In this campaign you will find the material on which to build an exceedingly profitable business. Be sure you are in a position to supply fish every day—especially Tuesdays and Fridays. Keep your fish right — display it right. This and the increased demand will mean bigger profits for you.

LOCKPORT COLD STORAGE CO., LTD.

One of the best known firms in the fishing industry in Eastern Canada is the Lockport Cold Storage Co., Ltd., Lockport, N.S., of which Mr. Wm. Hodge is President and Managing Director.

The plant proper consists of power house, cold storage, smoke houses, fresh fish receiving rooms, machine shop, box factory, equipped with complete printing plant, mill, salt and storage buildings and has a frontage of over 600 feet, while outside warehouses



"Starling."—Lockport Cold Storage Co., Ltd.

and yards cover over 10 acres. The cold storage building is 5 stories high with 2 sharp rooms, having freezing capacity of 100,000 lbs. of fresh fish daily. The company also owns large warehouse for fishing gear, gasoline, engine supplies in which they are one of the largest dealers on the eastern coast. They also claim to handle more bait than any other firm on the eastern coast.

The firm have their own fire equipment with underwriters pump with a capacity of 500 gals. per minute and connected with a water curtain around the cold storage plant. Their fresh water and ice supply is located on land owned by the company at the back of the town where is also located their ice house.

Some 20 schooners fish for the plant, but in addition to this the company owns a gill-net boat, and a large steam vessel the "Starling," which in addition to picking up fish handles freight to Boston. The company also owns the boat which connects with Allendale.

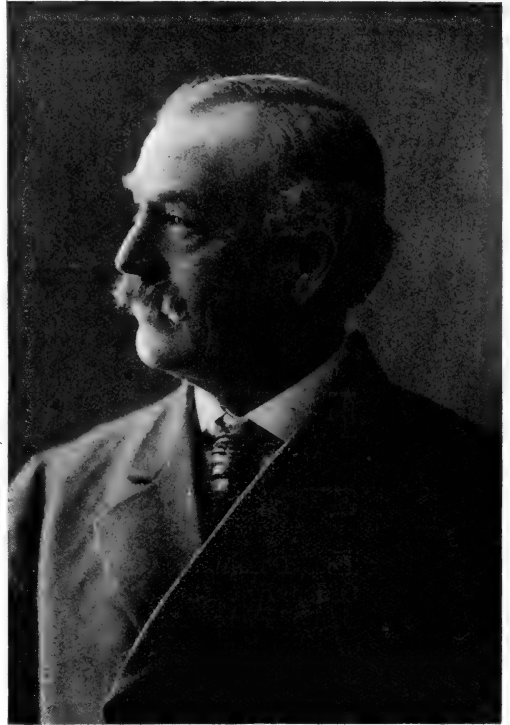
The plant is under the direct supervision of Mr. W. Hodge, the president.

MEAT AND CANNED FOODS ACT.

It would appear that some of those who preserve and sell fish in cans are not very clear as to whether the amended Act (1917), which becomes effective on December 15th, 1918, prohibits the sale or export, after that date, of fish or shell-fish, canned in the course of the current (1918) season, unless the cans are labelled in accordance with the amended Act.

The operation of the amended Act was deferred till December 15th, 1918, the opening date of the 1919 lobster packing season, — to allow packers time to adjust themselves to its changes and to use up any stocks of labels they had on hand.

For that reason the pack of 1918 is not subject to inspection and marking under the amended Act, and it is obvious that the sale or export of all fish canned before the 15th of December next, bearing the old labels, must be permitted even after that date,



John Jackson, St. John, N.B.

In 1903 Mr. John Jackson established his present business, handling cured fish and fish oils. Previous to going into business on his own account Mr. Jackson had been with one of the large wholesale houses of St. John for 26 years, the greater part of which time as manager of the fish department. Previous to that he was engaged in fishing off the south shore of Nova Scotia.

Recently Mr. Jackson has relinquished active interest in the business to his sons, Mr. Harry F. Jackson and Mr. R. P. Jackson.

Mr. Jackson is a member of the Canadian Fisheries Association and of the Canadian Fisheries Advisory Board.

The LaHave Fish Co., Ltd., dealers in hard cured and pickled fish in addition to their present fleet of five schooners have a beam trawler under construction. Two 200 H.P. crude oil engines, supplied by Canadian Fairbanks Morse Co., Ltd., will be used. They propose building four more trawlers of similar type during the next year. These trawlers will be 145 ft. deck measurement, 25 ft. beam and 11 in. deep. They will be used for the fresh fish business. Capt. J. E. Backman is President, and Fraser Gray, Secretary-Treasurer.

Their associated company, the LaHave Outfitting Co., Ltd., deal in all classes of fishing supplies and have a fleet of 20 fishing schooners and a number of small coasters. Capt. Jos. Conrad is Manager.

"SCYTHES SLICKERS"

Wet Weather Garments



When buying Oilskins, make your selection from the following grades :

"L I O N" BRAND

"S W A N" BRAND

"S A I L O R" BRAND

OILED CLOTHING

BEST FOR THE FISHING TRADE

Write us for price list

Scythes & Company Limited

MONTREAL

TORONTO

WINNIPEG

Salmon

C
A
N
S

Sardine

Lobster

Herring

C
A
N
S

Etc.

Packers of Canned Fish of every kind will be interested in the variety and sizes of cans manufactured to suit every need of the trade

AMERICAN CAN COMPANY

HAMILTON, Ont.

VANCOUVER, B.C.

MONTREAL, Quebec

BOOTH FISHERIES, LTD., OPEN NEW SARDINE FACTORY AT ST. JOHN.

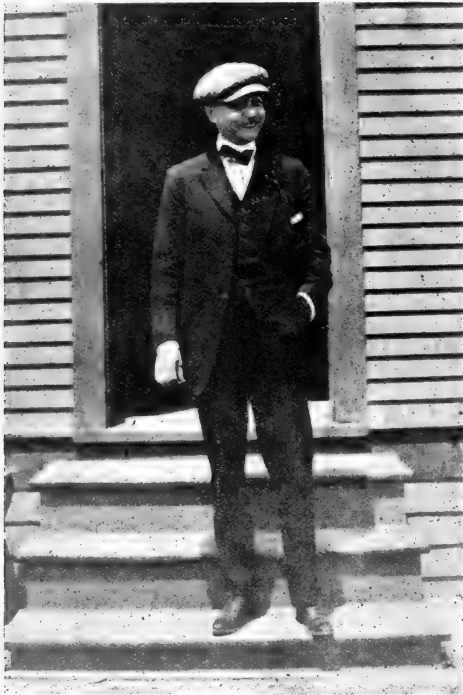
The new sardine factory of the Booth Fisheries, Ltd., which commenced operations early this month, is one of the largest and best equipped on the Atlantic, 60 men and 120 girls, exclusive of office staff, will be employed and three auxiliary sloops of 50 tons each, and one auxiliary schooner of 75 tons, will be engaged in carrying sardines from the weirs to the factory. Several large motor boats will also be used to care for the catch.

The boiler room is on a separate building and the motive power is supplied by the N.B. Power Co. 20 electric motors are used.

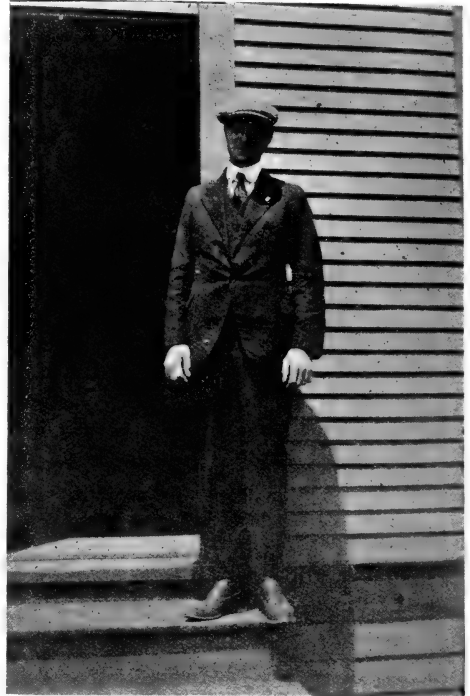
Mr. S. Q. Grady, general manager of Booth factories on the Atlantic coast, has had direct supervision of the erection.

Mr. V. D. Bachman, who has had extensive experience in managing sardine factories, will be resident manager.

Mr. E. S. Murray will have charge of office.



S. Q. Grady, General Manager of Booth's Eastern factories who supervised the erection of the St. John N.B. factory.



V. D. Bachman, Manager, St. John, N.B., factory of Booth Fisheries, Ltd.

When operating at full capacity 10,000 cases of fish per week will be turned out.

A wharf 160 ft. long has been erected, and the approach dredged to provide a depth of 6 feet at low tide.

The sardines will be erected to a tower at the end of the wharf, and thence by means of salt water circulated by a powerful pump sluiced into the lower story and steamed. Two large towers carry off the vapor which develops in steaming. The fish are then dried, the dryer being located in the second story, and the fish carried to it on an endless chain. Every process is mechanical. Machines seal the tins, which are then given a further curing in steam retorts.

Cloak and toilet rooms are provided and sanitary drinking fountains are installed in various parts of the building.

The Robert Taylor Co., Ltd., 140 Market St., Halifax, whose warehouse is shown below, are the distributors for Maritime Provinces and Quebec, of the well-known VAC rubber boots for fishermen. This firm was established in 1866, and Mr. W. B. Taylor is President, and Mr. D. Taylor, General Manager. Their representatives who call on the fish trade are Messrs. G. W. Graham, R. J. Hurst and W. H. McLaren.

J. Ernest & Son, Ltd., Mahone Bay, N.S., dealers in dried and pickled fish have, through their associated company—Ernest Shipbuilding Co., Ltd.—built 4 vessels during the past year. Two of these were 350 tons, and the other two 100 tons, and they now have the keels laid for two more, one of 350 tons and other 175 tons.

A Fisherman's Profit Depends Upon The Way His Motor Acts

POLARINE has just the right body to maintain the gas-tight seal between piston rings and cylinder walls. Polarine possesses the lubricating qualities that reduce wear and friction in every moving part of the motor. Its use means freedom from excessive carbon troubles. It lengthens the life of your motor and increases the satisfaction and service you will receive from it.

Polarine
FRICTION REDUCING MOTOR OIL

Makes a Good Motor Better

Profits depend largely upon your motor. Your motor needs Polarine.

Premier Gasoline, Gargoyle Mobiloils, Royalite Coal Oil, Silver Star Kerosene, No. 1 Engine Distillate and Arctic Cup Grease are other Imperial products well known to those engaged in the Fishing Industry in Canadian waters.

THE IMPERIAL OIL LIMITED
BRANCHES IN ALL CITIES

T 847

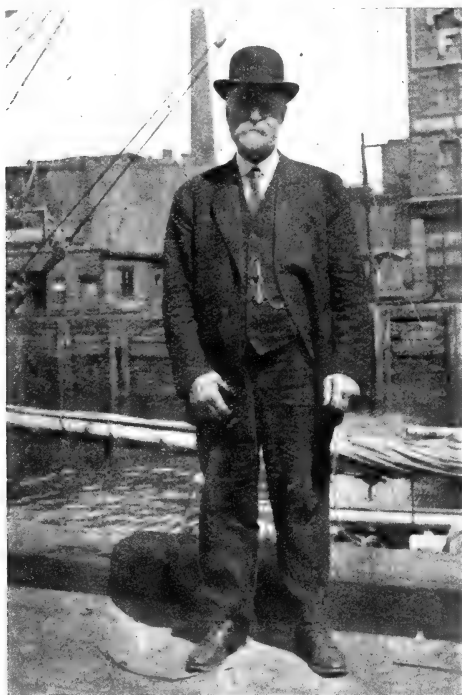




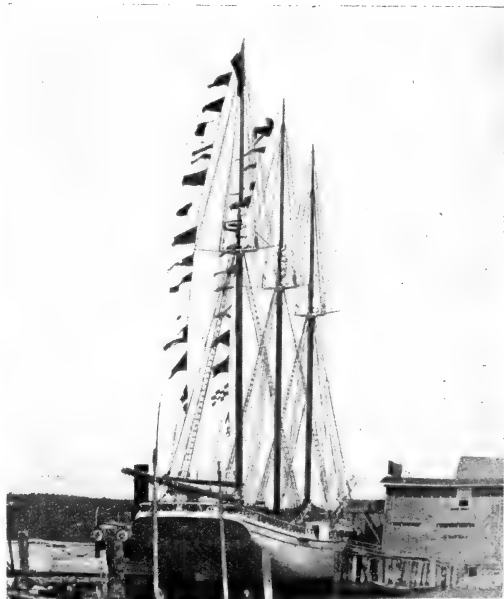
New Sardine factory of Booth Fisheries, Ltd., St. John, N.B.

52 years ago this month Mr. Jas. Patterson started in the fish business in the exact location where he now carries on his present business as a wholesale fish merchant, in St. John, N.B. During this entire time Mr.

Patterson has been engaged in the fish business, first with his uncle, then later as a partner in the firm of Masters & Patterson, and since 1877 has carried on the business in his own name.



Mr. James Patterson, St. John, N.B.



"Miriam J. Smith"—370 ton vessel, owned by W. S. Smith Co., Ltd., Lunenburg, N.S.

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

119 Youville Square,

MONTREAL

I am in the market at all times to Buy or Sell on Commission,
Fresh, Frozen, Smoked and Salt Sea and Lake Fish, in Carload
Lots or Less.

Correspondence Solicited

License No. 1-017

... can remember,
... skill to so toughen
... that it will outlast ordi-
nary boots **TWO TO ONE.**

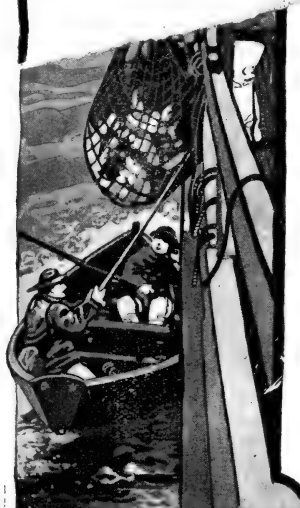
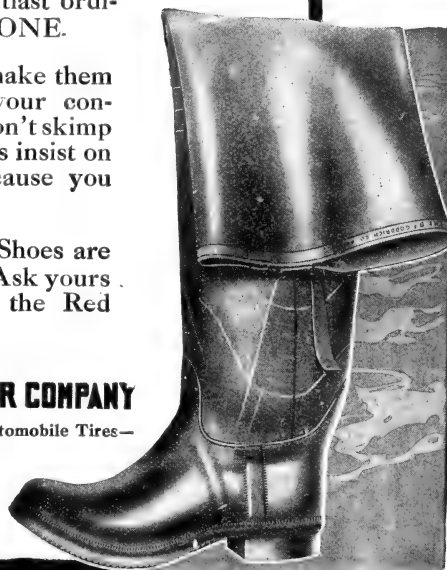
Again, we WANT to make them
RIGHT. We want your con-
tinued patronage. We won't skimp
—we want you to always insist on
Goodrich Goods because you
know they are best.

“Hi-Press” Boots and Shoes are
sold by 40,000 dealers. Ask yours
for the footwear with the Red
Line 'Round the Top.

THE B.F. GOODRICH RUBBER COMPANY

Makers of the Celebrated Goodrich Automobile Tires—
“Best in the Long Run”

The City of Goodrich—
AKRON, OHIO



"HI-PRESS"

with the Red Line 'Round the Top

The **GOODRICH BOOT**

FOR FISHERMEN

NORTH AMERICAN FISHERIES & COLD STORAGE CO., LTD.

The North American Fisheries and Cold Storage Co. Ltd., are erecting a plant at Liverpool, N.S., which will cost over \$100,000, and will be one of the most modern in the country.

For the foundation of the main building which will be 188 x 60 feet and three stories high, along the water front and for 25 ft. up piles were driven and cut off at low water and a 3 ft. wall of concrete built up to ground level, and then a 1-ft. wall of concrete above the ground level to a height of 3 feet, so that the first floor will be on a level with freight cars. The entire building is of very solid construction, douglas fir and spruce being used throughout the entire building.

The building on the third floor will overhang to the edge of the wharf where two hoists will take fish direct from boats to the third floor, where they will be washed and panned and placed on gravity conveyors into

The power house is a separate building 100 ft. x 30 ft. and 24 ft. high.

Arrangements are made for further addition, 75 x 188 ft., to main building at a later date.

The company has a siding on each end of the property for shipping and receiving purposes, and a wharf 186 ft. long with 24 ft. of water.

Mr. Wm. Fellows Morgan, Jr., of New York, is president, and Mr. E. J. Murphy, general manager. Mr. Murphy has been in the refrigerating business for the past 25 years with the Brooklyn Bridge Freezing and Cold Storage Co., and the Merchants Refrigerating Co. of New York.

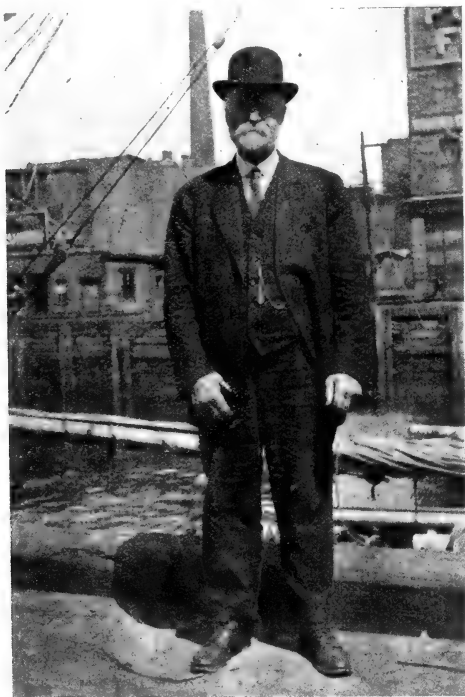
J. F. Clifford, formerly manager of South Shore Fisheries, Ltd., Liverpool, N.S., has taken over the business of this concern. They will deal in fresh fish to the Boston and Canadian markets and will also handle ice and bait. They are now putting up Scotch cured herring and plan shortly to put up large quantities of bloaters and kippers. The smoke house will



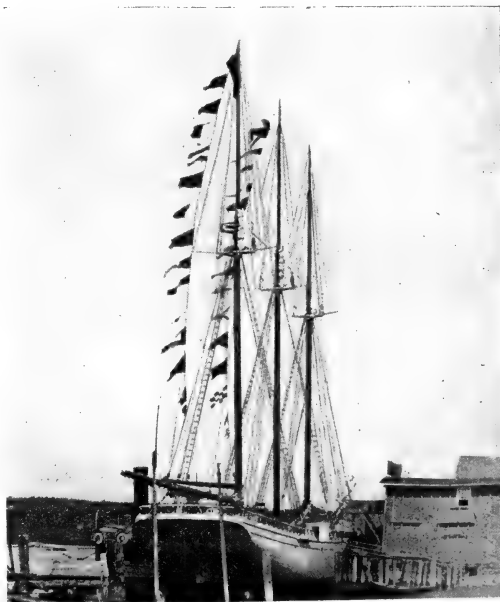
New Sardine factory of Booth Fisheries, Ltd., St. John, N.B.

52 years ago this month Mr. Jas. Patterson started in the fish business in the exact location where he now carries on his present business as a wholesale fish merchant, in St. John, N.B. During this entire time Mr.

Patterson has been engaged in the fish business with his uncle, then later as a partner in the firm of Masters & Patterson, and since 1877 has carried on the business in his own name.



Mr. James Patterson, St. John, N.B.



"Miriam J. Smith"—370 ton vessel, owned by W. S. Smith Co., Ltd., Lunenburg, N.S.



Why Do "Hi-Press" Give Such Unusual Wear?

"Hi-Press" Boots are delivering so much more wear—keeping feet so much more comfortable—that they are unquestionably the most popular footwear among fishermen today.

The Boots' success is based on two things—knowledge and good will. First, we *know* rubber. Goodrich has meant "Best in Rubber Goods" as long as you can remember, and it takes wonderful skill to so toughen the rubber that it will outlast ordinary boots TWO TO ONE.

Again, we WANT to make them RIGHT. We want your continued patronage. We won't skimp—we want you to always insist on Goodrich Goods because you know they are best.

"Hi-Press" Boots and Shoes are sold by 40,000 dealers. Ask yours for the footwear with the Red Line 'Round the Top.

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"HI-PRESS"

with the Red Line 'Round the Top

The GOODRICH BOOT

FOR FISHERMEN

WM. MacMILLAN.

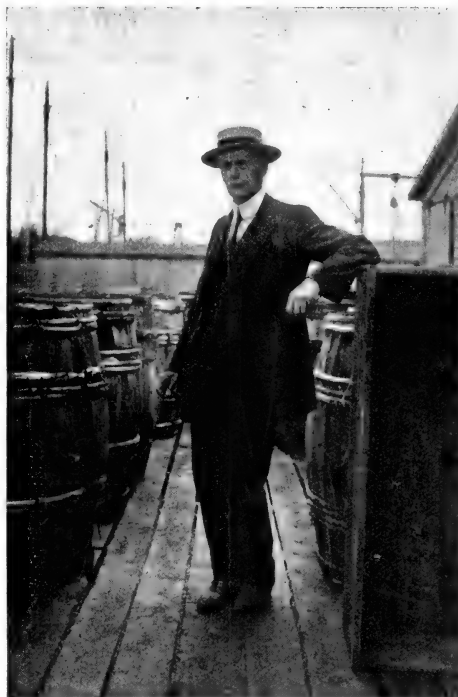
One of the best known men on the southwest shore of Nova Scotia, is Mr. Wm. MacMillan, of Lockport, N.S.

Mr. MacMillan was born in Lockport, but his first business venture was with Mr. A. W. Hendry at Liverpool, as wholesale dealers. In 1891 Mr. MacMillan felt the lobster business offered possibilities, so choosing an undeveloped field he went to Anticosti and started the first lobster factory on the island, using a steamer, "The Anticosti," to gather up the catch. Owing to the severe weather the second year, which practically prevented any operations whatever, Mr. MacMillan sold out and returned to Lockport, starting in the salt fish business and also operating a shipyard.

The trade at that time in salt fish was entirely with the West Indies. This gradually changed on account



Wm. MacMillan, Lockport, N.S.



MR. H. R. L. BILL,

Lockport, N.S.,

who is one of the largest shippers to the Canadian market of live shore fresh fish.

of the heavy duty placed on fish imported into the French islands, and the decline of the sugar plantations owing to the competition of German beet sugar, so Mr. MacMillan entered the New York market, and has since shipped large quantities of fish there.

In latter years the difficulty of obtaining crews for the vessels has forced Mr. MacMillan to reduce his fish business so that at present only 2 vessels are being operated.

Mr. MacMillan is a great believer in the future of Lockport, and contends that with railroad facilities this place will be the leading Canadian fresh fish port on the Atlantic coast. He states that as soon as a spur line is run in from Allendale he is ready to extend his operations to a much larger scale.

Mr. MacMillan's last words to your correspondent were: "Lockport is in close proximity to the best winter fishing grounds on the South Shore, and with a branch railway line the fresh fish business here can be increased practically without limit."

The Athabasca Fish Co., Ltd., of Edmonton, Alta., of which E. A. Sims is president, D. H. Watson, Vice-president and Manager of Fresh Fish Department and J. W. Pace, Sec.-Treas. and General Manager, have started a fish cannery in Edmonton. They intend to can their surplus production not needed for the fresh fish market. The cannery was started on June 8, and have already done a fair business, but supplies have been increasing and by the 1st of August they hope to have receipts amounting to two or three cars per week.

Government Inspector Davidson made a third examination of the cannery a few days ago and expresses himself as being highly pleased with the lay-out operation.

Under the brand "Athabasca", canned Pike and Mullet will be put on the market. The cannery will have a capacity of 500 cases per day of ten hours, already their supply of fish has enabled them to put up as high as 200 cases. The company is accounting on packing about 10,000 cases this year.

The fish are obtained from Lesser Slave, La Biche, Wabamun, St. Anne, Island and Kristina and some of the smaller lakes. The supply promises to be much better after July 15th, when the whitefish season opens. The Government limit for whitefish on Lesser Slave Lake is 1,500,000 pounds and from La Biche, 500,000 pounds. The proportion of coarse fish is usually about 30 per cent. of the above mentioned variety, even when the fishermen are trying to keep away from the coarse fish haunts.

was run. If we had known this, a very serious protest would have been made, and we would not have consented to the taking off of the express assistance for the benefit of an extra day of the Seafood Special freight. I wrote a letter of protest to the Department and told them it would be manifestly unfair to discriminate against other sections if this express assistance was removed, and since it seemed of such great importance to increase production of fish to assist in the war, it did not seem to be a proper time to remove assistance granted for a number of years. I do not think the Department has treated us altogether fairly in cutting off without any notice or advice, so that we could set our side before it. There was no question raised or any talk of removing express shipments when they undertook to give the increased freight service.

The following members were added to the Transportation Committee to assist in preparing the resolution:—Messrs. Byrne, Short, James, Binns, Cornell, O'Connor, and Hodge.

The Convention adjourned until 3 p.m.

Afternoon Session.

The Afternoon Session commenced at 3 p.m.

THE PRESIDENT (Mr. S. Y. Wilson) read his address, as follows:

Gentlemen: In presenting this report for the period just past, I wish first to express my appreciation and thanks to the officers and members who have carried on the work of the Association so efficiently with but little personal assistance from myself, owing to the fact that circumstances have prevented my attendance at the executive meetings, which have taken place at Montreal due to the fact that a quorum was more quickly obtainable there. The details of these meetings and the work performed for the Association will be reported by the different committees so that it is necessary for me to go into details.

The activities of the Association were not entirely confined to matters connected with the industry. For on the occasion of the fearful and horrible disaster that befell this city on the 6th of December last a special committee gathered together a subscription totalling \$3,000 for the victims of the disaster who had been deprived of their sight.

This amount was transferred by your President to Sir C. F. Fraser, whose acknowledgment was as follows:

January 7th, 1918.

W. R. Spooner, Esq.,
Secy.-Treas. Canadian Fisheries Association,
Room 600, Read Building,
35-45 St. Alexander St.,
Montreal, P.Q.

Dear Sir,—I beg to acknowledge the receipt of your very kind letter of December 31st, which with your splendid contribution of \$3,000 from the Canadian Fisheries Association was handed me to-day by Mr. S. Y. Wilson, of Halifax. It is very encouraging to the Committee having in hand the Halifax Blind Relief Work to find that the interest in this particular form of relief was so fully appreciated by your Association, and I can assure you that our Committee are deeply grateful for your timely and generous help.

It is impossible at this date to give absolutely accurate details as to the loss of sight due to the terrible explosion of December 6th. It is known that at

least one thousand men, women and children had their eyes injured at the time of the disaster. Four hundred or more were minor injuries which did not effect the sight. Four hundred others lost the sight of one eye and in many cases enucleation followed. About two hundred have been made totally blind or have had their sight so far impaired that they will be practically blind for life. The problem of how to care for these newly blinded people, to shelter them and to arrange for after-care and for training is one that is receiving the most careful attention of the Committee and I think I can assure you that this problem will be dealt with in a satisfactory and practical way.

Will you kindly, through your official organ, convey to the donors of your contribution the very sincere thanks of the Halifax Blind Relief Committee.

Very gratefully yours,

(Signed) C. F. FRASER,
Chairman Halifax Blind Relief Committee.

Overseas Shipments.

The volume has correspondingly enlarged as the number of troops overseas has increased. The conditions for distribution in England have been improved under the direct supervision of Major Hugh Green, to whom the thanks of this Association are due for his efforts in connection with this development.

Home Markets.

The consumption of fish products has materially increased in Canada during the past year, due in a large measure to the hearty patriotic co-operation of the consuming public in conserving the beef and other products as a means of winning the war.

Your association has made earnest and effective efforts to increase production and better transportation conditions and introduce improved methods of distribution with some degree of success.

Publicity.

Your Committee have continued the campaign inaugurated during the previous year and we are pleased to acknowledge the able assistance in this work afforded by the Food Board so that the consuming public have in a large degree been convinced that Fish products are a staple diet and not just a substitute as was largely the popular idea not many years since.

Transportation.

The greatest problem the industry has to consider is that of transportation. It is so vital that we can only hope for progress and development to the extent in exact ratio that transportation facilities are provided. Material improvements have been obtained through the efforts of your Transportation Committee, which will be reported by their chairman.

Production.

Since the last Convention in January, 1917, there has been added to this branch of the industry, on the Atlantic Coast, no less than four steam trawlers by purchase, one by charter or contract and two more are under construction.

With these seven steam trawlers operating under ordinary conditions there should be produced an average of 1,000,000 pounds per week.

The ordinary production of fresh fish by the shore boats has fallen off in proportion to the enlistments from the respective districts, but on the whole has

increased by at least 100 per cent.

The bank fishing of 1917 was at least an average and very satisfactory from a financial standpoint, due to the high prices obtained for the product.

The present season will be equally satisfactory if reasonably fair conditions continue to the end of the season.

Pickled fish branch has shown a marked improvement in the matter of the standardization of packages and selections together with an enhancement in values partly due to the before-mentioned standardization and partly to the short import supply of both mackerel and herring from Great Britain.

Similar developments are taking place on the Pacific Coast in connection with their off-shore fisheries.

At the last convention the value of the Canadian fisheries as reported by the "Blue Book" was about \$34,000,000. I am creditably informed that the values for the present fiscal year as far as it has gone, indicates a value of over \$50,000,000.

Branches.

Many fisheries associations have been formed in the various districts throughout Canada and almost all have become branches of this Association, so that our activities are of necessity broadening and widening. This subject will be dealt with in detail by the Secretary's report.

Finance.

This is a subject that demands the most serious and liberal consideration of the members of this Association because our efforts are curbed and curtailed by the limitations of our financial ability.

This Association has already obtained results which have and are directly worth many times the actual amount expended by the Association so that in asking you to give greater financial assistance to it, we do not have to apologize.

Programme.

The programme which the Association is able to place before the members at this Convention, for their instruction and pleasure, is mainly due to the efforts of Director J. J. Harpell and to whom the generous thanks of the Association are due for his efforts in gathering together so many men of recognized scientific and technical ability at your Convention. Personally, I would like to recommend him for the D.S.O.

In conclusion I desire to draw to the attention of all those connected with the industry, their responsibility towards the same.

The Fisheries of Canada are a natural national resource, vested in the whole people of the Dominion and that although we are privileged to operate and develop the same, we have no right to do so in a way that will jeopardize its future by methods calculated to impair the future.

I am more convinced than ever, that the duty of one and all connected with the industry is to join this Association, so that it will become the one and only clearing house for the exchange of ideas, looking towards the conservation development and perpetuation of the industry.

As is usual, I would like to add that I deeply appreciate the efforts put forward by the Executive as well as other members of the Association, who have always

responded with any information required for carrying on the work of the Association, and to bespeak for my successor the same cordial support that has been accorded to me during the past year.

THE PRESIDENT, in introducing the next speaker, Mr. H. B. Thomson, to the meeting, said:

In introducing Mr. Thomson, it is unnecessary for me to say anything in a personal way, as you all know him favourably, and probably to a greater extent than I do myself; but I would like to say that this association feels deeply grateful for the efforts the Fish Section of the Canada Food Board has put forth during the last year or more. In my report I claimed the increase is about 100 per cent, taking the fisheries industry as a whole as I see it from this side of the Dominion. But in many sections of Ontario, where they have expended more directly their efforts, they have figures to show the increase has been as much as 700 per cent in parts of Ontario, and while that is very good, they do not seem to be satisfied with their efforts yet, for they are doing a great deal at the present time to help the introduction of the Atlantic product by bringing the producer and distributor closer together, and giving us a helping hand in the matter of transportation, which is one of the vital questions we have to deal with. I think the best that can be said for Mr. Thomson is not any too good from this Association.

Mr. Thomson's Address.

H. B. THOMSON (Chairman, Canada Food Board): Mr. Chairman and gentlemen,—I am very glad indeed to be with you here today, and to hear the kind words that have fallen from the lips of your President. It is unusual for the Canada Food Board or any member of it to hear such kind expressions of opinion. As a rule we are continuously in receipt of the reverse, but as we receive a great many communications during a day, and a good many kicks and complaints, I think even after the very kindly remarks of the President there is no liability of our heads swelling at all, because the other remarks will counteract anything that has been said. At the same time, although we are trying to fill an exceedingly difficult position, I must say I am pleased to accord to the Canadian Fisheries Association and the people in the fish business of Canada the praise that they have supported us on every hand; in fact, that has been universal in every trade we have taken up and put under license. The beginning of this licensing system, which was the only way that we could see a proper and efficient control was effected, there was a general spirit throughout the trades to resist, if possible, the introduction of the license system. The Fisheries section was the first we took up. We didn't meet with any marked resistance on their part, and they very soon came to the conclusion that we were a very good organization to tie up with, and we were honest in our endeavours, and although many looked upon us as amateurs, which we were, they looked upon us kindly and said we will give them a chance and get in and help them. Anything that has been accomplished along the lines of increased production and consumption of fish in Canada has not been the result of the work of the Canada Food Board, but the co-operation of a great many of the producers and dealers of the country, and what we want to do is to spread that co-operation right down the line so that we get every producer together in the country, and every dealer. Another point I am continually bringing out is this: The fish business of Canada should be

a great national business. In the little booklet which we sent out dealing with the fish question and recipes for cooking fish, etc., we endeavoured by way of a diagram to demonstrate how the production of fish per capita had fallen off and the consumption was not what it ought to be, but we hope with the general co-operation that we will overcome this, not only as a war measure to reduce the consumption of beef, but to put the Canadian fish business on a substantial and permanent basis. Every man today, whether he is a producer, fisherman, or has anything to do with the business, should look upon it in that light. People of the world are creatures of habit. You recognize that in every part of the world. To give an instance of this; before the war it was almost impossible and practically useless for the American bacon and pork packer to send a commercial traveller through France; they would not consume bacon. Today they have gone in there and through sheer force of necessity the French people are eating bacon, and after the war is over, the United States and Canada have a huge market open for their bacon products simply because owing to the necessity of the war the habits of the people have been changed, and in future they are going to eat pork products. And it is just as easy for us, because I consider myself a fish man here to-day, to change the habits of the people of Canada and to get them to eat their own fish. Take the Provinces of Alberta, Saskatchewan and Manitoba; you have the finest fresh water fish in the country; in 1916 the consumption of their own fish was only 15 per cent of the catch, and through organization and general publicity and getting the people into line, by last year we changed that 15 per cent consumption to 65 per cent consumption of their own fish. Once the people of this country get into the habit of using their own fish they will continue in that habit and it will follow throughout every Province of Canada. The great thing to realise is, don't get them confined to one kind of fish. There are other gentlemen better fitted than I to explain the different kinds and merits of the fish in Canada, but if you keep on giving a variety of fish you will increase consumption materially; because, as you all know, if you are up against it—I used to think fine brook trout were the best to eat; in one place in British Columbia I could not get anything else, and I had to eat that for ten days, and I got so absolutely sick of it, I didn't want to see one again. The people of Canada have been educated to halibut and salmon, especially the Pacific coast, and many people think they are the only fish we have; and because the price does not go down they are under the impression they are not getting cheap fish. I am very much interested in the Pacific coast, but I think your Atlantic haddock is just as good as anything that ever came out of the Pacific. Haddock, as you all know, is selling at 10c or less in Montreal and Toronto; halibut is selling around 35c; it is far easier to shift people on to a cheaper commodity, and you will develop a market and increase your business. I am not particularly keen on any line I am selling; my object is to increase my turnover, if possible. I don't care what it is. I am not stuck on one line at all; anything to increase the turnover; you should view it in that light, and so we will come in for varieties and keep the people well supplied, and you will be amazed at the increased consumption you are going to have. And that will not only be a war measure, but a permanent benefit to the country

and tend to develop the fishery industry and put it on the proper plane it should be, and that is one of the great industries of Canada. We have been too prone to get goods from other countries, but I can hardly go into that question with you business men; you realize, owing to this war, and the expenses Canada has to bear, our bond issues, our interest is going up, and taxation is going up, and the more we purchase from other countries the more the balance of trade is against us, and to fight the great commercial warfare after the war we have to face the situation and develop our own resources as much as possible, not only to meet the home consumption but to become an exporting country to a larger degree. There is no community in the world that is going to benefit by taking in another's washing; if you pay your bills and make money and get ahead, and pay interest on loans, you naturally have to get the money from the other fellows. Canada has to get the money from the other fellow, and the only way to do it is to develop the natural resources, produce goods to ship to the other fellow and get the money back. And we should face the fisheries from that point of view and develop home consumption and the export business. It might interest you incidentally to know what the effect of the fish consumption has been. I don't say this is direct, because it is almost impossible to figure out these different situations; there is nothing we have to go up against in a harder way than statistics, because as you know, you can get statistics to tell you almost anything, and after you get them you have to figure out the horse-sense of the situation and arrive at what you consider is some sane conclusion, because you can get figures and statistics to support any argument you may advance. Prior to the war Canada was raising enough beef for her own consumption; today—I can't tell you it is owing to the consumption of fish, but it has something to do with it—today the position is this: that Canada is exporting sufficient beef to the Mother Country and to the allies to support 500,000 soldiers at the front. How much of that 500,000 soldier beef supply you fish men want to take credit for remains with yourselves. The fact is there, and that is what we are doing in that line, and along other lines; but I don't need to go into that. You know the increase along other lines. It means you are really getting somewhere in the fish business. I am here today to point out these different things, and point out how the Canadian Fisheries Association and the men associated in the fish business can help in this work. To go back and give you some idea of what has been done in a small way in the work of the Canada Food Board; one of the first things Mr. Hanna did when he became Food Controller was to appoint a committee to look after the fish business. In all these undertakings that we tackle, no matter what industry it is, in the first few months there is an immense amount of what we call "donkey work" that has to be done. The preliminary lay out, trying to get people together, and people in that business to understand what we would like done. Great credit is due to Mr. Beer and Mr. Eaton. They devoted an immense amount of time and hard work to this fishery question and developed a working program. In the first instance, most of these problems look like fog and you don't seem to get anywhere—but after a time we got down to business and the present success which has been met with is largely due to the work

that these men have done. Of course, a great many people think that because I am Chairman of the Canada Food Board, that everything is done individually by myself. That is absolutely not the case, because when I tell you our monthly average for June in letters received was over 4,000 a day, Sundays included, and incoming telegrams over 180 a day, you will realize it is a physical impossibility for one man to carry on that correspondence and these details, and were it not for the fact that I am surrounded by a staff of men I would not give second place to, to any staff of men in the country, it could not be done. There is not a man associated with the work of the Board that does not realise it is war work. There is hardly a man working for the Canada Food Board today, and they work early and late, that could not better himself very materially by leaving the service and going out into the ordinary commercial pursuits along the line he is specially adapted for; and in selecting these men we tried to get the men closely associated with the business under consideration, and who can talk best along the particular line, and we have selected the best men for every department organized. There are a large number of departments, because you will readily appreciate we have to be familiar with every detail of each business. The fish section was particularly fortunate when we selected Capt. F. W. Wallace. Capt. Wallace is a man who thoroughly understands the practical end of the business; he has been a fisherman himself and been at sea. The time he came to us he was serving His Majesty in the Naval Forces, but we felt owing to his knowledge of the practical end of the fish business, and his general knowledge, that he could serve the country a great deal better by coming to the Board than by working on a trawler or something else in the North Atlantic. He has remained with us and is doing continuous and untiring work. I also mention Mr. Sawyer, who is continuously in the office and conducts the detail of the business. Although not an Atlantic man, he was associated with the fishery business on the Pacific coast, and I am satisfied of this, if any of you men have troubles with the Fish Section, it will not be for want of care, diligence or trouble that he will not try and set it right, and he has the business at heart and works night and day on the job. I don't propose to take your time to any great length, because you are all experts in your particular line of business. I am not. I take the general view of the situation and point out to you what I think is necessary and what should be done.

First and foremost in connection with the fish business, is the question of production: along these lines great advances have been made. One of the things we specially urged on producers on both the Atlantic and the Pacific was the necessity wherever possible of reducing the cost of the production of fish. We had great trouble indeed on the Pacific, to persuade them they could do well with the steam trawler. They tried it before, and they said it was impossible. It took a great deal of nursing and finally Captain Wallace went out with the steam trawler, saw their difficulties and gave them the benefit of his knowledge and experience, and the result has been we have steam trawling started on the Pacific, and it is very satisfactory, and the result to the consumer is more than satisfactory, because in the Western Provinces, and I hope soon in Ontario, the Pacific fish will be go-

ing down there, and the majority of that fish is selling at 10c to the consumer. The plaice, flounder and sole of the Pacific are to my mind just as good as the halibut. If you can get those fish introduced at somewhere around 10c you will accomplish a great work and develop a great business. As far as trawling for flat fish on the Atlantic, you know more than I do. I warn you to look out for the Ontario market, because if you don't get into it, the Pacific fellows will. It is a question of competition, and I cannot look with favour on any particular Province, but there will be a friendly rivalry for that Ontario market for all trawl caught flat fish. The Pacific men are going to hustle you pretty much. The next step is transportation. As you know, the Marine and Fisheries Department have been trying for a considerable period to secure more satisfactory transportation, and owing to a meeting that Mr. Found called in Montreal some four or five weeks ago he was enabled to make a most satisfactory arrangement whereby you are getting your fish hauled in refrigerator cars into Montreal and Toronto. Were it not for the persistent manner in which Mr. Found stayed with this question and finally arranged for that meeting, I don't think your transportation difficulties would be as good as they are. Then the question of distribution. There is a tendency on the part of the distributors of fish to ignore the small man; the fellow that sends in a small order. I have had a good deal of experience in introducing goods on the market of various kinds, and you must bear this in mind, that if properly handled you can get hold of the energetic small customer, I don't care how small, give fish to him in the way he wants it; his trade will develop and that small customer grows into a big one. I hope in dealing with the small man you won't ignore that fact. Everybody has to be nursed along. There is not a man in this room today who, when he started business, had not to be nursed by somebody; he had his difficulties to encounter and his own stiles to get over, and there was someone there to give him a helping hand and say, "Your orders are not big, but if we fill these orders properly you will satisfy your customers and your business will increase and you will increase your orders." That is the way to look at the situation. Encourage the small man, keep him going along and you will find he develops into one of your big customers.

Don't sit down and say,—"We are only shipping out fish by car load orders"; as soon as you get a firm in that attitude of mind, another fellow will come along and grab up and develop the small order business, and by and by he will say; "I might as well go in the big car load business," and he gets that, and you have not the small order business, and he gets away with the business. Take care of the small man; get him to develop his business and go after him along right lines, because he develops into a big buyer later on. As regards the next point, the education of the public. In everything else, particularly pertaining to this war, there is no country in the world that appreciated the education of the people like Germany. What was their propaganda for? They had a regular system of propaganda; look at the result in Russia; they had a propaganda in the United States and everywhere. It is the same in every business. You have to have publicity to educate the public. The average person was not eating fish because he didn't know anything about it. Those who did, thought halibut and

salmon were the only fish that Canada produced. Owing to a general rise in prices and cost of gear, the price climbed up until halibut and salmon got to the stage where they were no longer a substitute for beef from a cash point of view; people said it is costing more than beef; I will buy beef and mutton. If these people had been educated that you had other kinds of fish it would have been different. Look at what the Ontario Government has been doing in educating people to eat fish. The possibilities are absolutely unlimited if you keep people posted and educated to the fact that there are different kinds of fish, and there are varieties they had never heard of before. That is the way the business is developed. If you continue educating them you can all go to work and build up a substantial business, which will not only do you personal benefit, but the country at large, a great benefit, because it is absolutely essential for Canada today to develop her great natural resources, and the fisheries are one of the greatest of them. To give some idea of the increase of business since the starting of licenses—last year we by a careful estimate showed there would be 950 producers and distributors. Today we have issued 1,555 licenses, since last November, showing an increase of over 50 per cent on the estimate. I don't say the estimate was correct, but it certainly shows a substantial increase and we are continually getting applications from new people going into the business. To give you some interesting details which show how these things work out: The halibut catch by four representative dealers in my own province in the first five months of 1917 was nearly 11 million pounds; in 1918, halibut caught by these firms had dropped to 7 millions; a drop of over 40 per cent; in the meantime, the price had gone up over 20 per cent. The flat fish, and we include cod, and red cod and grey cod, landed by these firms in the first five months of 1917 was 2,600,000 pounds; since we got in to the flat fish business, in 1918, it was for three months, approximately for half the time, 3½ million pounds, and the price has decreased; on the one hand halibut decreasing and the price going up, and on the other hand, flat fish increasing materially and the price going down. As regards the general situation and the export fish business, it is unnecessary for me to come to Halifax to tell you the situation of the export fish business, because you know it better than we do. But I point out this, owing to the submarine warfare and the mine areas in the North Sea, the production of fish is going down rapidly. That production should be filled from this side. Take Holland alone. In the North Sea her fisheries were very large. Take the question of smoked herring: I take that because along the Atlantic seaboard you can supply that—the production of smoked herring in Holland, that was exported mainly to Great Britain, was 13,500 tons. In 1917, owing to the difficulties of catching fish, it dropped to 2,500 tons. That means 11,000 tons of smoked herring to be made up. Why should the people on the Atlantic seaboard of Canada not get that business. I have no patience with the profiteer and the men who take advantage of the situation, but in a case of this kind it is not taking advantage of the situation: it is supplying a necessity. There is a loss of 11,000 tons. As far as you men in the business are concerned, it would be good business as part of the Empire to make up your minds, if it is practicable—it may not be practicable—why should the people on the

Atlantic seaboard not get in and say we will make up part of the deficiency of 11,000 tons of smoked and kippered herring. You conserve so much money in the Empire. You help Canada out financially and replenish the old country with food that they cannot obtain from the usual sources of supply. I don't think that I have anything further to add; there are a great many men attending the convention here today that can attend to all these things, but I want to feel that as far as the Canada Food Board is concerned, we are endeavouring to deal with every situation absolutely impartially and fairly; giving every one a square deal and helping out the industry; to build up this industry not only as a war measure and necessity, but for an after the war necessity and also from a financial point of view, and we are perfectly satisfied that now is the time, for the public is in the right frame of mind. If we make a request of them to do anything, a very large percentage of the people fall in line at once. They do not argue and say it is crazy it is not doing any good; they assume, and I hope they are right, every time they make the assumption—and we do our best to see they are right—we have gone carefully into the situation and we have information at our disposal which the general public has not got, and when we make a request of the people they do not argue the point or discuss it; they say, these people at the Board have gone into this and it must be right, and we are going to do it. At the present time we are going to ask the people to increase the consumption of fish because the food situation warrants it; although I am glad to say the situation is materially better than it was last Spring. If you had sat in my office last January, February and March and received the cablegrams which we had from the British Food Controller, and the French and the Italian Controllers, laying before us the almost hopeless situation, particularly Italy and France; if you conceive the fact, from a survey on the 23rd December last there was only a three days' wheat and flour supply for France; and if you knew what that meant, supposing four or five ships went down, what it would have meant to France and to the allied cause, you would appreciate the serious position we were in, although doing everything we could to fill requirements. We were able to raise the embargo on pork the other day, conditions were that much better; but we are not out of the woods by any means. The situation is not too cheering; we have to see that the condition that arose last Spring cannot arise again. It is not because I have any desire or wish to remain in this job that I am taking this attitude, but it is because I think it is right and proper; and the allied food controllers took that attitude in London when they urged the people of this continent to increase production and take no chance whatever until the war is over and wound up for good.

THE PRESIDENT conveyed the thanks of the meeting to Mr. Thomson. He said: We have all been very much interested and instructed thereby, and all I can do is to pledge the continued effort of the Association in assisting the Food Board to attain the object they are aiming at.

Dr. Huntsman's Address.

Dr. A. G. HUNTSMAN, Professor of Biology, Toronto University, read a paper entitled: "Canadian Fish Resources; dealing particularly with the resources of the Atlantic." He prefaced his paper as follows:—

Your Secretary asked me to prepare some statement

of the resources of the Eastern part of Canada, dealing with Hudson Bay as well as the Atlantic coast, and I am proposing to speak first of all about Hudson Bay, because that part is the most pessimistic, and I don't want to end up in that vein. If I knew what your attitude was towards Hudson and James Bays it is possible I would speak in a more optimistic vein. I have here a short account of the fishery prospects for the Hudson and James Bays.

FISHERY PROSPECTS FOR HUDSON AND JAMES BAY.

By A. G. HUNTSMAN,

Biologist to the Biological Board of Canada, Professor of Marine Biology, University of Toronto.

That vast inland expanse of waters consisting of Hudson Bay with the adjacent bays and channels occupies an almost central position in the Dominion of Canada and has for centuries attracted the attention of dreamers, men with vision, who have considered the enormous possibilities of trade along its shores, of easy transport of merchandise over its bosom, and of the food and wealth to be derived from an exploitation of its innate resources of fish and other marine products. The first of these, the shore trade, was realized at an early date, producing the wealthy and influential Hudson Bay Company, the Company of "Gentlemen Adventurers," which has persisted from its foundation in 1670 up to the present day. The use of these waters for extensive transportation is in process of being achieved by the construction of the Hudson Bay railroad, by the detailed survey of the waters to be traversed, and by the determination of the means of avoiding the dangers incident to navigation in those regions. We are, however, particularly concerned with the last of the possibilities that we have mentioned, namely the prospect of developing important fishery resources.

An inland sea with an area of over 200,000 square miles, with an average depth of about 50 fathoms, only a small part having depths exceeding one hundred fathoms, and situated between latitudes corresponding with those of Ireland and middle Norway in Europe, has almost universally raised exceedingly high hopes of the development of an enormous fishery industry similar to that of the North Sea in Europe. We may ask how far these hopes have been fulfilled and to what extent their continuation may be justified by the facts already determined in the past as to the conditions in Hudson Bay.

In the actual development of a commercial fishery nothing has been accomplished in spite of the lapse of more than three centuries since the region was discovered by Hudson, during which time many, many vessels have sailed across its waters. When we consider the distances to which voyages are made in search of fish, as well as the location of fishing stations in remote and desolate regions, it seems hardly possible that the waters of Hudson Bay could have been navigated for so many years without the discovery of important fishing grounds, unless there be no considerable quantities of fish, particularly of those that can be taken with hook and line, existing in the bay. It has been stated that the discovery of America was due to the excellent fishing to be found along her shores, and she was at that time far more inaccessible than Hudson Bay has been for hundreds of years.

What is actually known regarding the fishes that occur in that bay and in the waters connected therewith? Of expeditions to the bay and of reports thereon there have been not a few, of which we may mention the following: 1769, Hearne; 1773, Forster; 1784, Pennant; 1846-7, Rae; 1878-80, Bell; 1892-5, Low; 1897, Wakeham; 1903-4, Low; 1914, Melville, Lower and Comeau. The fishes used for food in the Hudson Bay region are almost exclusively fresh water species, or at least such as live partially in fresh water, of which we may instance the whitefish, speckled trout, lake trout, Hearne's salmon, sturgeon, pickerel, pike and ling. The salt water species are of small importance, Greenland or rock cod, capelin, and sculpin being the only ones recorded as being taken for food. The claim is frequently made that the deep-sea fishing possibilities of Hudson Bay have not been sufficiently investigated and the impression is left that extensive waters teeming with valuable fish await the successful explorer. Does past experience to any extent justify this view? There can be only one answer, that it does not. Since the first discovery of the bay over three centuries ago its waters have been traversed almost yearly, with the exception of the first half century, owing to the fact that it gave the easiest approach to the vast region in the interior of North America, so valuable for the fur it produces. The incalculable value of the discovery in that bay of important fishing grounds must have spurred many a sailor to try for fish whenever an opportunity offered, yet no fish of any importance have been found. Pennant wrote in 1784, "Hudson's Bay is very ill supplied with fish. The common whale is very frequent there. The company have attempted to establish a fishery; and for that purpose procured experienced people from the Spitzbergen ships, and made considerable trials between lat. 61 and 69; but after expending twenty thousand pounds, and taking only three fish, were, in 1771, obliged to desist." We are safe in saying that Hudson Bay has produced the most expensive, although not the most valuable, fish in the world.

On the other hand what do the scientific results show? As many as seventeen species of salt water fishes have been reported from Hudson Bay, and these include many species much more difficult to catch than are the important commercial fishes of our eastern coast. In addition to the three kinds already in use, namely Greenland cod, capelin, and sculpin, there are only three others that have even a prospect of proving of importance commercially. They are, a flounder, which is rare, the lumpfish, which is actually rare, and the sand lance. That even these will be found in abundance is doubtful, as the flounder and sand lance come close inshore and if in numbers would not be overlooked.

Without exception, the marine fishes in Hudson Bay are such as are capable of living in the cold waters of the far north, as at Greenland. They are all to be found on the Labrador coast. Some of them occur no farther to the south than Newfoundland, the majority are found only as strays farther south, and only range as far along the coast as New York.

Just as these northern fishes disappear one by one as we go south, so do the important sea fishes of our Atlantic coast drop out in groups or one by one as we go north. Pollock, swordfish, albacore, and whiting barely enter the Gulf of St. Lawrence. The haddock, hake, bass, shad, alewife, tomcod, oyster, and

quahaug do not reach the north shore of the gulf, or only rarely. The herring, mackerel, lobster, and eel go no farther than the Strait of Belle Isle, if that far, and the smelt is found only in the southern part of Labrador. The cod, halibut, and salmon enter Hudson Strait, but do not reach Hudson Bay. Less important fishes show the same gradation in range.

There are undoubtedly fundamental climatic conditions that determine the distribution of these species and we can expect only a limited success in an attempt to extend their ranges. We have but meagre information concerning the physical conditions in Hudson Strait and Bay, and in James Bay. However, the observations made by Bell, Wakeham and Lower show that except for a narrow zone along shore and in the estuaries, the surface water of James Bay does not attain so high a temperature as 50° F. even by the end of summer, that of Hudson Bay not so high as 45° F., and that of Hudson Strait not so high as 40° F. This may be contrasted with our other waters — Bay of Fundy, over 50° F.; water off outer coast of Nova Scotia and in northern part of Gulf of St. Lawrence, over 55° F.; southern part of Gulf of St. Lawrence, over 60° F. In this respect, if in no other, Hudson and James Bay do not afford conditions suitable for our important marine food fishes.

We are, therefore, able to state definitely that there is no prospect whatever of the development of a fishery for either cod, halibut, smelt, herring, mackerel, lobster, hake, haddock, shad, or pollock in either Hudson or James Bays. While the deep-sea fishery of that region offers such poor prospects, the same is not true of the coastal and inland fisheries. Nearly all the important commercial fishes of the Great Lakes are to be found there in comparatively great abundance and many of them, such as the whitefish and trout, go to sea during a portion of the year and so make use of the food available in the salt and brackish water off the coast.

Much still remains to be discovered concerning the animals occurring in those waters and the conditions under which they live, and the task of the future will be to determine these, and in so doing to discover what quantities of ultimate food material there are available and in what way it may be converted into forms most suitable for the use of man.

The point must be emphasized that the region has been quite thoroughly investigated with hook and line and with shore nets, but an investigation with a steam trawler remains to be made. Very, very few, however, of the commercial fishes taken by the steam trawler fail to be taken also with hook and line. It is, therefore, quite certain that the fishes we have already mentioned as not being found in the bay, will not be found there in the future, even by the use of a steam trawler, except as strays. They are not regular inhabitants of the bay. The reason for their exclusion from those waters is not because they have no access to the bay, but because they do not find there suitable conditions for development during the egg and fry stages and the distances to be traversed from their breeding-grounds are too great. It may prove possible at some future date to regularly plant young fish of certain species in those waters, where they will grow to a commercial size.

A brief survey of the more important fishes may not be without interest, and we will consider first the fresh water species. The sturgeon is rather abund-

ant and occurs in the lakes and streams connected with James Bay and in those of the southern part of the west coast of Hudson Bay. The species, one or several occurring there, appear to be in doubt. The lake trout or salmon trout is found in all the larger lakes and in some of the rivers on both coasts of the bay. It should prove of considerable importance. The speckled trout is abundant on the Labrador coast, in Ungava Bay, and on both shores of James Bay. In the rivers flowing into Hudson Bay proper it does not appear to be so plentiful. The Arctic trout or Hearne's salmon is found in the lakes and rivers of Hudson Bay and enters the sea. It is less abundant toward the south, being found in James Bay only at the extreme north on the east side. The Atlantic salmon is not an inhabitant of Hudson Bay, its range extending only so far as the eastern part of the strait. However, the ouananiche or land-locked salmon has been found in lakes on the rivers emptying into the south-eastern angle of James Bay (Melville), but not elsewhere. The whitefish, of which there are several species distinguished with difficulty, is abundant on both coasts of the region and is of relatively great importance. It frequents both lakes and rivers and in James Bay enters the sea. The tullibee is found along the coast and in the rivers on both sides of James Bay, as well as on the west coast of Hudson Bay at least as far north as York factory. The pike, like the lake trout, is abundant in the lakes and in the rivers of both coasts, and is of large size. The pickerel abounds in the lakes and streams connected with James Bay, but is less abundant toward the north. For Hudson Bay it is to be found only in the southern rivers of the west coast. The yellow perch has been reported only from the upper waters of the Albany river (Lower), that is, in the extreme south. The fresh-water ling or burbot occurs in the lakes and large rivers of the whole region up to the far north.

A more extended account of the distribution of the few strictly salt water species, that are of value, may be advisable. The capelin has, since the earliest days, been known to occur in Hudson Bay and it appears to be particularly abundant on the west coast of the bay, but is found from the northern part of James Bay all the way to Hudson Strait, if Gordon's account of smelts at Nottingham island refers to the capelin. It is also known from Greenland, Labrador, and the Arctic coast of western Canada. It is of uncertain appearance on the shores of Hudson Bay, but as it is taken at times in great abundance, it is to be considered as an important fish of the region. The sand lance is distributed up the Labrador coast, through Hudson Strait, and down the east coast of the bay into James Bay, but there is no record of its occurrence on the west shore. Although small in size, its occurrence in schools makes it of importance as a bait fish, and it might also be of some value as food for man.

A single specimen of a peculiar variety of lump-fish was taken at Fort Churchill, by Dr. Bell, but, although this form is of divided value in some waters, its apparent rarity makes it unlikely that it will ever be of much value in this region. The Greenland cod must be considered as the deep-sea fish of Hudson Bay most likely to provide a regular, although limited fishery. It reaches a fair size, from upwards of five to perhaps as much as twenty pounds, and occurs along the east coast all the way from the strait at the north down into James Bay nearly to its southernmost end. The fishery for the true Atlantic cod extends only so far

as Port Burwell at the eastern extremity of Hudson Strait; but it has been caught at times even to George River at the bottom of Ungava Bay. Its absence from Hudson Bay appears to be thoroughly established.

The pollock has been reported from Hudson Strait and the west side of Hudson Bay, but in each case only a single specimen was found, and one of them, if not both, was a small, although apparently mature specimen (Johansen.) These localities are so far from the known haunts of the species, that it may be doubted whether the individuals found are really the true pollock. The Arctic cod is in reality a diminutive pollock with certain slight structural differences, and it has been taken in Hudson Strait as well as along the coast of Labrador. It is at least probable that these northern specimens, identified as pollock, are but examples of another dwarfed race adapted to life in such high latitudes.

The ordinary flounder of our Atlantic coast is distributed along the Labrador and into Ungava Bay at the entrance to Hudson Strait. The only account of statement that an Indian took one in 1914 in a net set for whitefish on the eastern side of James Bay, and the description given by the Indian makes it very probable that this was the flounder. Although this fish is of considerable food value it is scarcely likely that it will be found to occur in any great abundance in Hudson Bay, and it is probably confined to the east coast, as the opposite one has been so much more thoroughly investigated without revealing its presence.

For the fresh water fish the general distribution is that those of more southerly habit drop out as we go north, but are found farther to the north on the west side. The southerly marine species, on the contrary, drop out as we pass in through Hudson Strait on the south side and as we go down the east coast of the bay. This may be accounted for by the dominant current, which, according to the information given by Wakeham takes this course, but in a reverse direction, passing southward on the west coast and northward toward the strait on the east. The Arctic condition of this current will be ameliorated as it passes around and out of the bay.

FISHERY RESOURCES OF OUR ATLANTIC COAST.

By

A. G. HUNTSMAN, Biologist to the Biological Board of Canada.

We do not propose to speak of those resources that have already been developed, since the Blue Books, giving statistics concerning them, are generally available and we have no more refined computations to offer you. Canada should not fall behind the records of the past, nor even merely hold her own, but should advance to ever greater achievements in production. It is, therefore, undeveloped resources, with which we are concerned, and at the present time we, as a nation, are to a greater extent than ever before taking stock of the resources we possess, particularly of those of food, owing to the world shortage and the high prices that prevail.

Our fishery resources on the Atlantic Coast are indeed vast, for we have a very extended coast line and extensive fishing banks have been produced by the submergence in past ages of a considerable area of the margin of the continent. The banks stretch out one hundred miles or more from the coast and beyond them the ocean floor drops very abruptly to depths of a mile

or more. Inside the hundred-fathom line, this comprising virtually the whole of the area suitable for fishing, we have upwards of one hundred thousand square miles of sea, and in addition the immense banks off the Newfoundland coast, including the Grand banks, are in part exploited by our fishermen. This fishing area does not belong to us, since the greater part of it is in the high seas and is common to all nations, but our proximity to it gives us first opportunity, and perhaps also first claim, to garner in its riches.

That many sources of food on our Atlantic coast still remain either untouched or only slightly utilized is a matter of common knowledge. How much more can be taken from these waters without endangering the supply, we are not yet in a position to say, but the amount is certainly very great. We are in the favourable position of having our waters neither with the icy coldness of the Arctic, nor with the barren warmth of the tropics, but with the intermediate condition of the temperate regions. It is true that the icy Arctic current comes down along the Labrador coast and helps to lower the temperature of the water covering many of our banks, and also that the Gulf Stream brings tropical conditions to within a few miles of our coasts, but the great mass of the water is of such a temperature that life flourishes in abundance and the equal alternation of seasons promotes very rapid growth.

If we consider the extent of the fishing area (66,000,000 acres) and the amount of fish landed yearly at our Atlantic ports, (from 6 to 7 hundred million pounds) it will be seen that the yield is not large, amounting to only 10 pounds per acre per annum; yet all this fish equals 60% of the total catch for all Canada and has a value amounting to 50% of the total value of the Canadian fisheries. It has been estimated that in 1904 the North Sea yielded to the nations along her shores 15 pounds per acre, and the fishing there must be considered to have been very intensive for such an extensive area. These figures are very small, compared with the yield of waters under cultivation. The carp ponds at Stettin in Germany were estimated to yield from 58 to 141 pounds per acre per annum. An acre pond cultivated experimentally by the government of the State of Kansas is said to have yielded the extraordinary amount of 4,700 pounds of fish in three years, which is at the rate of more than 1,500 pounds per acre per annum.

Conditions vary greatly in the different waters, some being of necessity barren and yielding little or nothing. The factors that determine the productivity of any body of water are as yet only imperfectly known, so that we are unable to say whether a yield of even a tithe of this large amount is possible in our waters. The maximum production occurs in areas that are rich in the inorganic constituents, which are so necessary for the plant life, that furnishes the ultimate food for the animals in the water, but a shallow region, in which the light can penetrate to the bottom and which will have a relatively high temperature in summer is also necessary. A larger or smaller lack in these directions means a lower productivity, and we find this exemplified in many directions. For example, in the Province of Ontario, the Georgian bay is moderately deep, drains a rather poor and barren region, and consequently yields the small amount of from one-half to one pound per acre per annum. Lake Ontario is deeper, but its waters have come to a considerable extent from rich farming land, and the yield of the Canadian portion is from one and half to two pounds per acre

per annum. Lake Erie, on the other hand, is both shallow and rich, and from the Canadian portion form three to four pounds per acre are taken each year. In none of the cases referred to is it conceivable that the maximum production has been even approximated and great resources still remain for proper gathering and conservation.

It may be considered as quite certain that the production of our Atlantic waters can be increased by at least three hundred millions pounds per year. The attainment of this much to be desired end, will not come without a very careful and thorough consideration of all the possibilities that are presented, and also not without a comprehensive organization of our energies to develop these possibilities. We do not believe it advisable to attempt any estimates, which would indeed be most rough and of very doubtful value, of the amounts of the various kinds of fish which an intensive fishing of our Atlanaic waters would make available but we shall indicate in what direction development seems to be possible.

The fisheries for certain of the shores fishes have already reached or perhaps have passed in some cases the limits of profitable expansion, unless recourse be had, as has already been done in some instances, to artificial means of increasing the stock. Such are the salmon, lobster, trout, sturgeon, shad and bass, oyster and quahaug. A few of the deep species are in approximately the same condition, namely the halibut, swordfish, and albacore, as well as the important marine mammals, — whale, seal, blackfish and beluga —, although sufficient information is not available for many of these.

There yet remains an opportunity of increasing the landings of certain of our inshore fishes, such as the smelt, alewife, tomcod, flounder, eel, clam, cockle or round whelk, and crab, as well as of our seaweeds. The landings of some of these have greatly lessened in the last two decades, the fisheries for tomcods, founders, and eels having entirely ceased along certain sections of the coast, owing to the fishermen having obtained more lucrative employment. There is no evidence of any lack of these fishes, and a strong effort should be made to bring these fisheries back to their prime condition of some years ago, and indeed to surpass former records, which would not be difficult of achievement. While flounder fishing has ceased in some districts, in others it has been steadily increasing.

The dragging for scallops could be much more extensive than it is, for on only a small portion of our coast has this industry been prosecuted. Much also remains to be done, particularly to the north, in extending the fishing for such deep sea kinds as the cod, haddock, hake, and pollock, and the off-shore net fishery for herring and mackerel is still in its infancy. The for business of catching and capelin for bait has assumed considerable proportions, but the catch could readily be increased and there is a good prospect of utilizing them both, but especially the capelin, as food for man, and a demand for them could soon be created.

There is much reason for self-congratulation in our having begun in recent years utilizing a number of species of fish that had been neglected or despised previously, and the success that has attended efforts in this direction augurs well for what can still be done in introducing new varieties as food.

The fishery for albacore and swordfish has developed within the last decade and has quickly reached a condition which is apparently one of maximum produc-

tion. Other fisheries on the contrary are little more than started. The dogfish or grayfish offers great possibilities in the direction of the easy capture of large quantities of food, and it has been used sporadically in various ways. It is to be hoped that the efforts being put forth to place this fishery on a permanent footing may meet with success. It was only four years ago that skate and whiting were though worthy of a place in the fishery statistics and the demand for them has been steadily increasing. The available supply of these fishes has been little more than touched and we may confidently look forward to a steady increase in their consumption. We may call special attention to the neglect of the small species of skate, which are of a very convenient size for the frying trade and of fine flavour, as we have recently determined. They are much preferred in the English markets.

The deep-water flatfishes, excepting the two halibuts, have come into use only in the last few years and have passed on the markets as sole or flounder. There are three kinds, sole, plaice and dab, and only a very small portion of the available quantity has been utilized. The development of a market for each kind under its own name would be well worth while, and, owing to their fine flavour and convenient size, the results would be permanent.

One of the fishes that has most recently been put upon the market is the catfish or wolffish, which is of large size and an ugly customer for a fisherman to tackle, but, in spite of its unprepossessing appearances, it affords a large quantity of beautifully white meat with a delicious flavour. There are three kinds, of which only one occurs along shore and is well known the others being taken only on the banks to the north. For the last three years a considerable quantity of mussels and periwinkles has been shipped from at least one district of our coast, and a part of this has found a sale in our markets. When it is considered how abundant they are along our coast and how easily they are obtained, the probability of their furnishing a very large quantity of cheap and wholesome food is very great indeed. The mussel is much the more important of the two, and the sustained effort that is being made in the United States to popularize this species of shellfish is worthy of emulation by us.

There are also many kinds of which we have made little or no use up to the present, and for many of these the question of their utility is not in the least problematical, as they have long been in use in Europe or in the states to the south of us. Our failure to benefit from their presence in our waters has been due to the habit of eating other kinds, as well as to the former superabundance of so many and so varied fishes. In this connection we may mention a number of species. The rosefish has long been appreciated in this city of Halifax, where it goes by the name of the John Dory. The butterfish is of very fine quality indeed, but has only a limited distribution on the southern part of our coast. The muttonfish has been pronounced by many of us who have tried it, as superior to cod and haddock. The cunner is noteworthy for having had for many years a society founded in its honour, the purpose of which was to do justice to its edible qualities. The lumpfish has long been esteemed in Chaleur Bay and, I am informed, in Halifax as well, also in many countries of the old world, including Scotland. The monkfish is exceedingly ugly, but, when decapitated, it is not unattractive and yields excellent steaks for the frying trade. I have been told that a fish merchant

in England "made a fortune" out of monkfish. Sharks, of which we have a number of species, are coming into demand, it having been reported that they sold at as high a figure as 24 cents per pound during last winter in New York.

Of unused species of shellfish, we have many, such as the hen-clam, razor clam, deep sea clams, limpet, and several species of whelks. Crabs from the Pacific coast and shrimps from the southern states are being sold in our eastern cities, while our own stores of these animals are scarcely touched. Two species of crabs are abundant, one of them along the whole extent of our eastern coast, while a very fine and large crab can be taken in considerable quantity in the deep water of the gulf of St. Lawrence. Shrimps and prawns in large numbers are to be found along the coast, but the feasibility of having a successful fishery for them remains to be determined. Many other marine resources of our Atlantic waters, having perhaps a lesser value, we shall pass over.

It cannot be supposed that the mere enumeration of unused resources can do anything but call attention to their extent. Each case will have to stand or fall upon its own merits. The success of a new venture depends upon so many factors that it is wise to predict only after a careful consideration of the attendant circumstances in the particular case in hand. It is easy to be too pessimistic as well as too optimistic. Little more than half a century ago haddock was considered a decided inferior fish, and halibut were avoided by the fishermen. What is needed is as full information as possible concerning the distribution, abundance, size, edibility, mode of capture, and season of the fish in question, as well as concerning the best methods of handling and cooking it. Conditions at the time may or may not be favourable for its introduction, or the neglect to attend to some necessary details may cause the failure of the new venture, a failure which foresight might have prevented. Experiment on a small scale and the elimination of the difficulties that are met with may be necessary.

The Biological Board is trying to assist in this work by procuring some of the needed information and with a part of the inquiry it is the body best fitted to cope. But success can only come through co-operation. Fishermen, fish merchants, transportation companies, wholesale dealers, retail dealers, and the public are the essential links in the chain. We, the scientists, can in that capacity merely serve to a greater or less extent as a sort of intelligence bureau, and we shall be glad to have the mistakes we make in the parts of the problem more unfamiliar to us forgiven and, when known, pointed out, and also to have the assistance of all those interested in the fisheries in the common task of obtaining the necessary information and of disseminating it, which should finally result in action being taken. We shall feel thoroughly repaid if our share of the work helps to finally place our fisheries on the best possible footing, one in advance of that of any other nation in the world, and nothing less would satisfy us.

Dr. Huntsman concluded his paper by remarking:—The conclusion is, commercially, scientifically and theoretically, from the physical conditions, there is no prospect of deep sea fishing in Hudson Bay, but the fresh water fisheries are of considerable importance.

In connection with this work, find what there is, determine the conditions which make for success in using any of these forms, and in that I hope we shall

have co-operation. Part of this work we can do well, but all the aspects of it can be considered scientifically, and it would be well if we had the best scientific experts of which some of you are already on the transportation and fishing side; it must be all brought together. There are some who can approach the problem from all these aspects and it would be better for them to do it. But no one seems to get started, so we will start and would like your assistance.

THE PRESIDENT: I am sure the members of the Association have enjoyed this paper to a very great extent; I can only say for myself, and I believe for the other members of the Association, that co-operation is the word. When we get the men working on the scientific side and get those handling the commercial side together, there is no question as to the future.

MR. PAULHUS: I was interested in the paper read by Dr. Huntsman, and I was surprised and disappointed in one way about Hudson Bay. What I had read and understood, we don't know anything about Hudson Bay in regards to fish. Now, we are led to believe there is no fish there of any commercial value. I am of opinion that all the surveys up to now are not, to my mind, conclusive. I would like to have an expression of opinion by some practical men in the fish business. The fact that it is said there are lots of fish in the rivers flowing into the Hudson Bay leads me to the conclusion there must be lots of salmon, for instance. Regarding the description he has given us of the area of our fishing grounds, I was pleased to learn that we had such an area; that the amount of fish taken was only two pounds, I look forward that we shall increase it to ten before long. It is one of the aims of this Association that everyone in the fish business should get together and develop it so that it will be one of the best assets of this country.

MR. HARPELL: The estimates of the northern and north-western parts of Canada have always been pessimistic—much more so than were justified. For years we heard of north-western Canada as being unfit for agriculture, yet we now know that it is one of the best agricultural districts in the world. We received the same kind of report concerning the district of Patricia lying to the south-west of the Hudson and James Bay, yet according to the commission which the Ontario Government sent up there shortly after this territory became a part of that province it is very fit for agriculture. This commission ventures the prophecy that it will not be many years before a large section of this territory is under cultivation.

This commission reports that in the early days the Hudson Bay Co., maintained a farm in the most northerly part of the district and grew much of the agricultural products they required, but when the Canadian Government began to be interested in the north-west for settlement purposes the above-mentioned farm was discontinued.

From all that I have been able to gather concerning the explorations of the Hudson and James Bay there does not seem to have been any proper investigations, which would be likely to determine the value of these waters as deep-sea fishing grounds. Dr. Huntsman has never explored these waters himself. The information and the general outlook presented in the paper he has just read are based upon the reports of other investigators; none of whom have ever made an investigation even approximating what is necessary in order to determine the presence or absence of deep-sea

fishes. We will not hold Dr. Huntsman responsible for the pessimistic outlook he has just presented. He did not take the fish out; but will continue to believe that the fish are there until a proper investigation has been made.

MR. MALLETT: I might say I find myself unable to disagree with any of the very many fine points brought forward. From a practical standpoint, I am unable to controvert any of it. In Massachusetts waters we are getting a large increase of fish, utilising to the fullest extent every fishing craft we can get off the stocks. We are working to the fullest extent on the staple lines.

MR. BOWMAN: I have met men who have spent their lives on Hudson Bay, and I think their testimony bears out what our friend Dr. Huntsman tells us; they distinctly point out there is a scarcity of deep sea fish, but there is considerable of what we call the lake fish; trout, whitefish and those descriptions.

MR. CORNELL: We know very little about deep sea or shallow sea fishing. I am a great admirer of Dr. Huntsman. I never heard him without a great deal of pleasure. I consider he is one of those scientists who do not lose common sense with science. I could not let this opportunity go by when he spoke of cultivating the waters. As far as the lakes or inland waters are concerned, I consider, and we generally consider now, that that is the keynote for perpetuating the fishing industry; when I tell you, and I will perhaps surprise you, that the more you fish a lake the greater the quantity of fish comes in that lake. I will have to illustrate it by a farm. Suppose you want to raise all the food possible to raise on 100 acres of land; would you keep the bullocks until they are 14 years old? Or would you sell them when they are fully matured? You sell them for two reasons. You want to get the money, and to save the food that 100 acres would produce for calves and growing stock. We have a simple rule. Fish only the proper size mesh so that nothing but fully developed fish is taken, and take all you possibly can, because you weed out the non-producers and leave the food for those that are growing. Be very careful as to the fish that you hatch by artificial hatcheries. Suppose you want to consider a lake from a purely business standpoint. There is a great deal of pleasure in catching trout, and you like it. It is a nice fish to eat, but as far as the lake goes it is the most expensive that ever was there. Let us illustrate that: Suppose you had another 100 acres, and you wanted to produce all the food possible, and wolf meat was worth 8c a pound; mutton worth 10c. Would it be good business to raise sheep and feed them to the wolves and then sell the wolf meat? When you are hatching pirate fish—cannibals—you are feeding them on the fish that are worth as much or are of greater value, and it will take 25 lbs. of white fish to make 1 lb. of trout. Would it be good business to put close seasons on trout or any other pickerel and raise them in hatcheries and keep up wolves to eat the rest of the fish of greater value? These things ought to be considered before you undertake to cultivate your inland waters. I hope before there is a general system inaugurated whereby they undertake to cultivate inland waters it will be considered as to the most profitable fish that you want to replenish your lakes with.

Mr. W. A. Found: I don't want this matter to close without it being clearly set before the convention as to the steps that have been taken to ascertain what

are the real possibilities in Hudson Bay and why these have not been proceeded with to a greater extent. When expressing any personal opinion, I should like to quote the opinion of the late Dr. Wakeham whom I regard as having been one of the best authorities on fishing conditions in the North, and whose opinions were very largely in line with those given expression to by Dr. Huntsman. For some years before his late lamented death, when this country lost the services of an excellent officer, the matter was very fully discussed with him, and we decided that it was best to have an exhaustive examination of the conditions obtaining there from the double standpoint, that of the Bay itself, and that of the rivers flowing into the Bay. After canvassing the situation, it was felt that these ends could be best achieved by sending a couple of men, capable men, with canoes down the rivers from points on the G.T.P., to Hudson Bay, and to send a boat around from here equipped fully with fishing equipment of the different kinds to test the conditions in the Bay. The conditions in the rivers flowing into the Bay were fairly well examined as closely as time at the disposal would allow, and as the season would permit to get out in time, and it shows, as Dr. Huntsman indicated, quite an abundance of different kinds of river fish, some of which, contrary to the habits of the same fish in other waters, went from the rivers to the salt waters during a portion of the year. The expedition to the Bay itself was not satisfactory. We chose a fishery officer from Seven Islands, a naturalist, and who had a large experience in Northern waters. Conditions developed which made it impossible for as satisfactory a survey to be made there as we would have liked. In fact, there was very little information of a positive or final character obtained, but sufficient was obtained to indicate that that method of examination was not going to yield the information; the best method would be to get a capable steam trawler. Negotiations were taken up by the Department with Great Britain to try and find out about a trawler, and we found it was extremely difficult to get a trawler with sufficient coal carrying capacity to stay there long enough to examine conditions sufficiently. The war broke out, and the Hudson Bay Railway was in process of being completed when there would be a base from which a trawler could operate readily. A sum was in the estimates up to two years ago to complete the investigation, but on account of these conditions which I have just spoken of, the matter was dropped, not permanently by any means, but until conditions would again become normal; the Hudson Bay Railway would be completed and the investigation could be made which would be final in its character.

D. J. BYRNE: I heard one gentleman remark that what he liked about Dr. Huntsman as a scientist, he talked sense. My experience has been that when scientists go into a question of this kind they invariably talk sense, and the sooner we realize that the work done by scientists is not only common sense, but it is backed up by the examination of the conditions as we find them, the better it will be for us. I think our Association is particularly fortunate in having access to the biological members to assist in determining anything required to develop the fisheries. As commercial fishermen we should be very much interested in what Dr. Huntsman said about the unused specimens. In these he mentioned particularly plaice, soles, skate, cat and dog fish. I assume by catfish he meant deep sea

catfish or wolf-fish. It has been my own experience in landing a quantity of ground fish, including haddock, pollock, where there were cat fish or wolf fish, which are beyond doubt excellent food fish, they had to be sold about 1c a lb. and the reason was the varieties were not known, and they had to be disposed of at a price which was not profitable to fish for them. And the same in the matter of shellfish, periwinkles, mussels and clams. To return to the scale fish, plaice, soles, skate; I think not only would the development of a market for these help to enlarge our business, but it would also at the same time help to decrease the cost of producing the other kinds. It is a well known fact they do not market more than 50 to 60 per cent of their catch, because they get these varieties which take up space and do not bring a sufficient return to carry them to market; while they are excellent food fish. I think the idea should be to develop trade for all varieties which Dr. Huntsman mentioned in his exhaustive paper, and by doing so we will increase the possibilities of the fisheries; the quantities and varieties for the public, and at the same time reduce the cost of producing.

Mr. T. W. C. Binns: We have been asked to co-operate with the Food Board, and one thought I would like to mention is this: When the demand begins to go up, keep the price reasonable and the retailers will co-operate.

Mr. HARPELL: Dr. Huntsman, in dealing with the Hudson Bay was quoting entirely from reports other than his own. But the field in which he has done valuable research work is covered by the second part of his paper, namely, that on the unused fishes of the Atlantic. In this part of his paper he touched upon the scientific work that was possible in both the producing and non-producing fishing grounds.

I think there is a pronounced opinion among our members that this scientific work is very necessary and since it is being done on grounds that are common to the United States, Canada and Newfoundland, these three countries might reasonably be expected to undertake it conjointly.

For some years the outbreak of the present war there was an International Scientific Commission formed by the countries of north-western Europe to make scientific explorations in the fishing grounds of the North Sea and adjoining waters and as their work is generally recognized as being most valuable I do not think that the countries on this continent could do better than follow this example and appoint a prominent International Scientific Commission to do similar work on the deep-sea fishing grounds off the Atlantic and Pacific and in boundary waters such as the Great Lakes. It would seem only right that such work be undertaken conjointly by Canada, the United States and Newfoundland or such of them as are jointly interested in the waters explored.

Work such as has been done recently by Dr. Hjort, whose report has not yet been published, might come under such a commission.

THE PRESIDENT: I would like Dr. Huntsman to elucidate; if I recollect, he said there were quite a number of whales in Hudson Bay; they were one of the species more plentiful than other commercial fish.

DR. HUNTSMAN: The whale fishery was very good for some time, but not so good in recent years.

THE PRESIDENT: How would it be possible for

these to maintain themselves without smaller fish to feed on?

DR. HUNTSMAN: I feel confident there is food there; ordinary food fishes are not there. I think an expedition such as Mr. Fourn suggests can be made with a steam trawler to see if any other fish can be caught, and at the same time other conditions as to temperature, etc., can be found out; also conditions of small life, and then we will have a complete story; there may be considerable food there. That water is not too cold for cod; cod are found in as cold waters along our own coasts; but apparently the cod that live at the upper end of Newfoundland, that are caught there, around Cape Chidleigh, migrate there from farther South and they are only able to breed successfully on the South shores of Newfoundland; Hudson Bay is too far from the breeding grounds.

QUESTION: In your opinion is the temperature of the water too low for the development of the cod roe?

DR. HUNTSMAN: I believe it is too cold for the development of the eggs and young fry. From the information I have, even the Bay of Fundy does not produce young fry. It is produced in warmer waters.

HON. MR. STONE: I may say I am only just a visitor here and I have listened with a great deal of interest to the paper which Dr. Huntsman has entertained us with, and through the medium of his paper I seem to gather a whole lot of information in connection with Hudson Bay; although being from Newfoundland. Hudson Bay is a place I am not familiar with, nor with the fisheries around there. This is exactly what we have been after for a long time, for somebody who has a good knowledge of the investigating conditions, to go right down to the bottom and try to teach us something that we don't know. We, of course, as fishermen, which I have been all my life time, I have fished on the coast of Newfoundland, Belle Isle and Labrador, I have not been afforded an opportunity, because I have always got my fish this side of the Cape, well down the coast. I think the paper read here this afternoon by Dr. Huntsman is of great interest, and I believe if carried out along the lines he suggested just now, in sending a trawler to find out conditions, I believe we shall derive great benefit from the information brought back. There was a coal supply mentioned in connection with the trawler; we thought also we would have obstacles when we started the Northern Labrador service from Hopedale, North. We had to get over the coal supply. We found we had to send ships to Sydney and send them to certain parts of the coast and put it on another ship and send it further along still. We seem to have a system whereby we get our coal supply down there now, and if a similar system was arranged I don't believe you would experience any difficulty in connection with getting a trawler down there to make investigations and find out everything in connection with the fisheries which Dr. Huntsman has spoken of here this afternoon. As far as Newfoundland is concerned we only have a small population, 240,000, and I suppose we are practically unknown to the outside world, but as far as quantity, quality and variety goes, I think we have as much fish as any country in the world, practically speaking. There is one particular point, and that is, we are the oldest British colony, and in addition to being the oldest British colony, we have been operating the fisheries for the past 400 years, on or about, and to my mind at the present time they are only just in their

initial stage, and it is further development and co-operation we want, and we want scientific information; and if we can go along the lines and try to get some means of finding out conditions North, I don't think we shall lose any time and we will benefit a great deal by the information which will be supplied.

DR. A. H. MACKAY: My object here is to learn something more about the subject, especially from the practical side. I think there is such a thing as evolution at work in the sea, as well as on the farm, and that conditions even in Hudson Bay may change when we do something to change some of the conditions on the land surrounding it.

EVENING SESSION.

Mr. W. A. Found's Address:

W. A. FOUND, Dominion Superintendent of Fisheries, read a paper dealing with the "International Aspect of the Fisheries and the Problems before the International Fisheries Commission."

THE INTERNATIONAL ASPECT OF THE FISHERIES AND THE PROBLEMS BEFORE THE INTERNATIONAL FISHERIES COMMISSION.

W. A. FOUND,

Dominion Superintendant of Fisheries, Ottawa.

The oceans are commonly regarded as the great separating spaces between countries. From a fisheries standpoint, they are the common meeting grounds of the nations, where all engage, by the means they think best, in gathering the harvests of the seas. While the laws of any nation can govern the actions and methods of fishing of any vessel flying its flag on the high seas, as well as in U. S. territorial waters, they cannot be applied to competing vessels of other nations. It is, therefore, not surprising that the fisheries have been a fruitful source of international consideration and difficulty.

Also, from the earliest times the fisheries have been the parent of navigation and of commerce. In earlier years the fisheries were regarded as the nurseries of the navies. It was with a view to naval strength that England had from an early period confined to British subjects residing on the European side of the Atlantic, the right to dry and cure fish on the shore of Newfoundland. This is clearly evidenced by the introductory words of British Statute 15, George III, Chapter 31, 1775, entitled:

"An Act for the Encouragement of the Fisheries carried on from Great Britain, Ireland and the British Dominions in Europe, and for securing the return of fishermen, sailors, and others employed in the said fisheries, to the ports thereof at the end of the fishing season."

The introduction to this statute read as follows:

"Whereas the fisheries carried on by His Majesty's subjects of Great Britain, and of the British Dominions in Europe, have been found to be the best nurseries for able and experienced seamen, always ready to man the royal navy when occasions may require, etc."

It is, therefore, not surprising to note that the rise and fall of the naval and commercial supremacy of Maritime European nations were largely coincidental

with their rise and fall in the control of the fisheries.

The early history of the North American continent is in a large measure embraced in a history of its fisheries.

Tradition has it that fishermen from Brittany visited the Banks of Newfoundland before Columbus discovered the West Indies. It would not be impossible in those days that this could have happened without the information reaching the ears of the court. Neither the fishermen nor their employers had much communication with the court, and they themselves were accustomed to undertake not only the defence of their own trade, but the punishment of their enemies. We, however, know that the discovery of Newfoundland and the North American continent by the Cabots in 1497, was immediately followed by the extension of the voyages of British and other fishermen to the unspeakably rich fishing banks off Newfoundland, and in the Gulf of St. Lawrence. Under the practice then obtaining, Great Britain might reasonably have claimed exclusive use of these fisheries, but the too powerful navies of Spain and Portugal at that time made this impracticable. Indeed, that such effort on the part of Great Britain was anticipated, is evidenced by the fact that the Spanish Ambassador at the British Court, lodged a protest against possible interference with Spanish fishermen. Spain, however, soon became absorbed in her rich discoveries about the Gulf of Mexico, and her fishermen gradually left the banks.

In the fifteenth century, Portugal was strongly entrenched in this fishery. Even the conquest of that country by Spain did not end her participation in the New World fishery, but the number of her fishing vessels rapidly declined in the last few years of that century.

But at this time the French flag floated on probably the largest number of vessels. It was through the efforts of those engaging in the fisheries and of the companies having fur-trading concessions from the French king that French colonization was undertaken in America.

British seamen and merchants were, however, not idle. As early as 1502, Henry VII granted letters patent for colonizing Newfoundland to two Bristol merchants named Elliot and Ashenhurst. While little seems to have been accomplished in the way of colonization, every spring British fishermen sailed for the Banks and returned in the fall with their catches, which they had dried and cured in Newfoundland. The profits were large and merchants began to quarrel amongst themselves for the most desirable shore stations. Soon after Queen Elizabeth came to the throne a far from purposeless energy seized her sea-faring subjects, and her great admirals, Drake and Gilbert, and others, soon obtained for her the mastery of the seas.

From time to time, patents of fishing rights were given by British sovereigns and large profits were made.

The reported discovery of gold, in Newfoundland, caused a flurry of excitement in England, and a company was formed in 1610 to develop it, but interest in the fisheries predominated. Lord Bacon, who was one of this company, was willing that they should leave the search for gold to others, and that they should engage in the fisheries; to use his own words, "Like which, of all minerals, there is none so rich."

More and more attention was being directed to the

fisheries of the coast of Massachusetts. In 1602 Bartholomew Goswold, an English navigator, who was associated with Sir Walter Raleigh, sailed in a small vessel to this coast, and after reaching Massachusetts Bay, he proceeded to the headland which he named Cape Cod, which it still bears, on account, as he said, "of the fish which pestered the ship."

Fishing could only be carried on in the summer, and the spare hands who remained with a sufficient store of provisions for the winter, were the first colonists of this section. Evidently, it was the possibilities of the fisheries that prompted the Pilgrim Fathers to choose that section, as when their spokesman was asked by King James what profit might result from their settlement there, he replied in the single word "fishing."

The first colonists of New Hampshire went there for fishing and hunting. The first export therefrom was fish, and the trade and navigation of this whole section was founded on fish.

Friction between the colonists of this section and those from France further North, in what are now Nova Scotia proper and Cape Breton, in connection with the fisheries, soon began. The British and French Governments freely granted overlapping patent rights in the wilds of North America. The boundaries given were vague, and monopolies of the fisheries were either expressly conveyed or assumed, and when claims conflicted the patentees urged their respective Governments to reprisals.

More time may not be devoted to this aspect of the matter. Let it suffice to say that all or nearly all the conflicts between the British and French that went on for about one hundred and fifty years and were finally settled on the Plains of Abraham in 1759 grew out of, or embraced disputes about, the fisheries.

Under the Treaty of Paris in 1763, which ended French domination in the New World, and transferred to Britain all French dependencies, it was provided that the French should continue to retain the liberty to fish and dry their fish on a portion of the coast of Newfoundland, as was specified in the Treaty of Utrecht in 1713. It was further provided that they should have the liberty of fishing in the Gulf of St. Lawrence, on condition that they would not come nearer the shore than nine geographical miles, nor nearer Cape Breton Island than 45 miles. From this it will be seen that Great Britain at this time claimed very wide territorial jurisdiction. The treaty further provided that the French should retain the two small islands of St. Pierre and Miquelon, in the Gulf of St. Lawrence, as a shelter for their fishermen, but they were not to be fortified nor to have permanent residences erected thereon.

These provisions were modified by the Treaty of Versailles in 1783.

Little colonization of what are now the Maritime Provinces was done following the Treaty of Paris and before the American Revolutionary war, but the then British New England colonists continued to exploit the fisheries of that region, and following the Revolution they claimed that as they had in the past continuously and freely resorted to these fisheries and had borne, almost unaided, the burden of maintaining and defending their own and British interests, in these fisheries, against the aggressions of the French during the wars between Great Britain and France, they

had in them at least equal rights with Great Britain and the British colonies.

Massachusetts was one of the most influential of the New England colonies, and the fisheries were of primary importance to it. Prominent amongst those who negotiated the Treaty of Peace of 1783 was John Quincy Adams, of that colony. It is, therefore, not surprising to find the representatives of the United States insisting on a continuance of their fishing opportunities and that Article III, of this Treaty, provided as follows:

"It is agreed, that the People of The United States shall continue to enjoy unmolested the right to take Fish of every kind on the Grand Bank and on all the other Banks of Newfoundland; also in the Gulf of St. Lawrence, and at all other places in the Sea where the Inhabitants of both Countries used at any time heretofore to fish. And also that the Inhabitants of The United States shall have liberty to take fish of every kind on such part of the Coast of Newfoundland as British Fishermen shall use, (but not to dry or cure the same on that Island), and also on the Coasts, Bays, and Creeks of all other of His Britannic Majesty's Dominions in America; and that the American Fishermen shall have liberty to dry and cure fish in any of the unsettled Bays, Harbors, and Creeks of Nova Scotia, Magdalen Islands, and Labrador, so long as the same shall remain unsettled; but so soon as the same, or either of them, shall be settled, it shall not be lawful for the said Fishermen to dry or cure fish at such Settlement, without a previous agreement for that purpose with the Inhabitants, Proprietors, or Possessors of the ground."

It will be observed that this Article contained two distinct stipulations—the one recognizing the "right" of the United States to fish on the high seas, and the other granting fishing and other "privileges" within British jurisdiction.

These inshore and onshore fishery privileges soon began to prove a cause of unrest and friction between the local fishermen and the visiting ones from the United States. It frequently happened that the local fishermen were not only obstructed in their lawful enterprises by competing United States fishermen, but they were often prevented altogether from fishing in desirable places by finding harbors and creeks preoccupied by such fishermen. Also goods were being smuggled into the British Colonies by the visiting fishermen. It is, therefore, not surprising that Great Britain absolutely refused to allow this state of affairs to continue after the war of 1812. The negotiators of the Treaty of Ghent, in 1814, by which peace was restored, were unable to agree regarding the fisheries. Hence that Treaty is silent in the matter. The United States contended that their fishery "liberties" as well as their "rights" provided by the Treaty of 1783 were unaffected by the war. They contended that this Treaty was not simply a treaty of peace, but one of partition between two parts of one nation, agreeing henceforth to be separated into two distinct sovereignties; that the fishery "rights" and "liberties" were not grants from Great Britain to the United States but acknowledgment of them as rights and liberties enjoyed by them before separation, and which it was agreed should be continued to be enjoyed under the new conditions.

In this contention Great Britain did not for a moment concur. She insisted that the Treaty of 1783 had been abrogated by the war, and in the absence of any provision regarding the fisheries in the new treaty, the United States fishermen stood in the same position in British waters as those from other foreign nations, and were so not authorized to use the shores or to fish in territorial waters. Great Britain, however, while maintaining this attitude without qualification, intimated that it was not her desire to exclude the United States fishermen from enjoying reasonable privileges on the British coasts, conditional on interference with the local fishermen being guarded against, and expressed willingness to enter into negotiations in the premises.

This was done and the negotiations resulted in the Treaty of the 20th October, 1818, the first article of which deals with the fisheries. It reads as follows:

"Whereas differences have arisen respecting the liberty, claimed by the United States for the inhabitants thereof, to take, dry, and cure fish on certain coasts, bays, harbours, and creeks of His Britannic Majesty's Dominions in America, it is agreed between the high contracting parties that the inhabitants of the said United States shall have, for ever, in common with the subjects of His Britannic Majesty, the liberty to take fish of every kind on that part of the southern coast of Newfoundland which extends from Cape Ray to the Ramea Islands, on the western and northern coast of Newfoundland; from the said Cape Ray to the Quirpon Islands; on the shores of the Magdalen Islands; and also on the coasts, bays, harbours, and creeks, from Mount Joli, on the southern coast of Labrador to and through the Straits of Belle Isle, and thence northwardly, indefinitely, along the coast, without prejudice, however, to any of the exclusive rights of the Hudson's Bay Company; and that the American fishermen shall also have liberty, forever, to dry and cure fish in any of the unsettled bays, harbours, and creeks of the southern part of the coast of Newfoundland, hereabove described, and of the coast of Labrador; but so soon as the same, or any portion thereof, shall be settled, it shall not be lawful for the said fishermen to dry or cure fish at such portion so settled, without previous agreement for such purpose with the inhabitants, proprietors, or possessors of the ground. And the United States hereby renounce, forever, any liberty heretofore enjoyed or claimed by the inhabitants thereof to take, dry, or cure fish on or within three marine miles of any of the coasts, bays, creeks, or harbors of His Britannic Majesty's Dominions in America, not included within the above-mentioned limits; Provided, however, that the American fishermen shall be admitted to enter such bays or harbors for the purpose of shelter and of repairing damages therein, or purchasing wood, and of obtaining water, and for no other purpose whatever. But they shall be under such restrictions as may be necessary to prevent their taking, drying, or curing fish therein, or in any other manner whatever abusing the privileges hereby reserved to them."

It was thought at the time that this treaty had put an end for good and all to the questions in dispute, but it soon developed that the two countries placed different interpretations on certain portions of the above quoted articles. J. W. Johnston—whose name

is well remembered and justly honored in Nova Scotia—who served as Attorney General in this province during the decade of the forties—he was later a distinguished judge—submitted a reasoned paper to the then Governor of the Province, in which he argued that the United States fishermen had no right to come into a Canadian bay at all for fishing purposes no matter what its size might be. The United States, on the other hand maintained that their fishermen could not be excluded from any bay that is more than six miles wide, or the usual territorial three miles from either shore. The Nova Scotia assembly backed Mr. Johnston, and the matter was submitted to the law officers of the Crown in Great Britain, who supported his view, and an effort was made to enforce it. In 1843, the United States vessel "Washington" was seized in the Bay of Fundy. The United States protested. The British Government finally decided to stand by the Nova Scotia contention, and in a few years the two nations were all but at each other's throats.

Also the growth of the mackerel fishery, the tendency of the fish to school inshore, and the need for surface bait used in this fishery, were strong incentives to invasions of our territorial waters.

On the other hand the markets of the United States were the most attractive ones to our fishermen.

In the later forties, and earlier fifties, heated diplomatic discussions went on and war was certainly imminent, and it speaks volumes for both nations, that even at that time they decided to settle their difficulties amicably. Negotiations for the treaty were set on foot, and these resulted in the Reciprocity Treaty, of 1854. Under this treaty, fish and fish products products were admitted into each country from the other, free of duty, and the United States fishermen were allowed to fish in our territorial waters, excepting in the rivers and for shell-fish, and similar privileges were accorded our fishermen on the portions of the coast of the United States north of the 36th parallel of north latitude.

Owing, not only to the growing competition by Canadian fishermen, but to conditions between the two nations that arose during the Civil War, the United States gave notice in 1865 that the Treaty would be terminated at the expiration of twelve months, which was the length of notice required by the treaty. It so ceased to be effective in 1866.

As a matter of grace, and no doubt in the hope of again reaching an amicable settlement in the matter, the British Colonies arranged for the continuation of the privilege during the year 1866 by the issuing of licenses, the tonnage fee on which was 50c. This fee was raised in 1867 to \$1.00 per ton, and in the following year to \$2.00, but as the number of vessels taking out such licenses fell off from 365 in 1866 to 35 in 1869, the licenses were withdrawn, and the Treaty of 1818 again became effective. A fisheries protective force was put on and seizures of and interferences with United States fishing vessels ensued, with the consequent international friction and irritation, but in the following year the two nations got together again and negotiated the Treaty of 1871. This treaty became effective in 1873. It revived the fishery conditions under the Reciprocity Treaty of 1854. It also provided for the appointment of a Commission to determine the amount of compensation that should be paid by the United States to Great Britain, as the difference in the value of the fishery concessions granted

United States fishermen in Canadian waters over those granted our fishermen in United States waters. This Commission sat at Halifax in 1877, and their findings have since been known as the Halifax Award. The amount of their award was \$5,500,000. Of this amount \$1,000,000 were apportioned to Newfoundland.

This Treaty was terminated at the instance of the United States in 1885, but negotiations looking to a new treaty were set on foot, and Canada continued to allow United States fishing vessels to enjoy the privileges of the Treaty throughout the season of that year. These negotiations were not successful, and so the Treaty of 1818 was revived in 1886, and a fisheries protection fleet, to enforce its provisions, was put on. Seizures of, and interferences with United States fishing vessels followed, with the consequent irritation and rather heated diplomatic correspondence, but negotiations that were in process resulted in the appointment of plenipotentiaries, who, on the 15th February, 1888, agreed to what has since been known as the "Unratified Treaty of 1888." This Treaty defined the limits of exclusion of United States fishing vessels in certain bays, and in all other bays it was to be three marine miles seaward from a line drawn across the bay at the first point where the width does not exceed ten marine miles. It also provided that if the United States admitted fish, fish products, and their containers, free of duty, such articles from the United States would be admitted duty free into Canada, and United States fishing vessels would be granted annual licenses without fee, authorizing them to purchase in Canadian ports all provisions and outfits, to trans-ship their catches and to ship crews.

It was out of this Treaty that what have since been known as the *modus vivendi* licenses, grew. It was recognized by the Commissioners that the necessary legislation to make the Treaty effective could not be obtained in the respective countries before the fishing season of that year would come round, and with a view to promoting good feelings, and removing all possible subjects of controversy, the British plenipotentiaries offered to make a temporary arrangement, or *modus vivendi*, not to last longer than two years, whereby on the payment of a fee of \$1.50 per registered ton of the vessel, the privileges of purchasing all supplies and outfits, shipping crews and trans-shipping catches in Canadian ports would be granted.

This Treaty was ratified by Great Britain, Canada and Newfoundland, but was not approved by the United States Senate, but in the hope of reaching some arrangement, Canada continued the arrangement by special Act in 1890, and again in 1891. The following year a statute was adopted, giving the Governor in Council authority to continue it from year to year, and under such authority it has been renewed every year since that time.

As at the time this arrangement was adopted, fishing vessels were driven by sails only; when motor driven vessels began to be used, they were held not to be eligible for such licenses, and as more and more vessels were installing motors annually, every year the number eligible for licenses decreased, and the value of the privilege became less and less.

During the past twenty or twenty-five years a situation has been developing on the Pacific Coast, which, in 1916, became quite critical.

On that coast, mainly off British Columbia and Alaska, there has been and is still the greatest halibut

fishery the world has yet known. This fishery was started on its extensive commercial basis in 1888, from Washington State ports, by vessels sent around the Horn from Massachusetts. A few years later the New England Fish Company of Boston opened a branch at Vancouver, as that port was nearer the fishing grounds than Seattle, and afforded equally favorable railway facilities to the Eastern United States' Markets as did Seattle, where the business centered in Washington State. The duty into the United States was at that time one-half cent per pound on fresh fish, and to escape this the Company, in 1894, asked the Canadian Government to allow them to use American fishing vessels and ship their fish in bond, but this was refused. In or about 1898 the United States duty was raised to one cent per pound. The Company then again approached the Government with a request to be permitted to use American vessels so that they might bond their fish. They claimed that while they found it possible to compete with Seattle shippers and pay one-half cent per pound, they could not do so and pay a duty of one cent per pound, so that if their request were not granted they would have to close down at Vancouver. The Government decided to grant the concession experimentally for six months, but it has been continued, from year to year since that time by Special Order in Council. In 1915, when the G. T. P. began operating from Prince Rupert the privileges were extended to allow American vessels to sell their fish in bond as well as to ship it in bond, the object being to enable the smaller vessels which had not selling connections in the Eastern Markets, to avail themselves of the privileges. Vessels coming for such purposes were also allowed to buy bait and ship crews, but not otherwise.

The intensive fishing to supply the ever growing demand for halibut was more than the banks could stand. The more accessible southern banks off British Columbia have been so depleted as to be threatened with commercial exhaustion, and in recent years the greater portion of the fishing has been carried on off the coasts of Alaska, even as far northwest as Kodiak Island. The vessels from Seattle and Vancouver going to these northern banks make a return trip about equal in mileage to the railway journey across the continent. It is, therefore, not surprising that practically all the boats not owned by companies with headquarters in other places, soon began to resort to the nearer base of operations—Prince Rupert. This caused so much agitation, principally in Seattle and Ketchikan, the chief Alaskan port, that in 1916, a private Bill was introduced into Congress having for its object the prohibition of any Pacific fish entering the United States through a foreign country unless it were shipped from an American port. This Bill found marked support and it was passed successfully through the initial stages, but it was finally defeated. It was introduced again at the next session, but that Congress expired before it was reached. It was, however, intimated that it would be introduced at the following one.

Had this Bill become law it clearly would have been a serious blow to the Canadian fishing industry on the Pacific Coast; but it would have been equally serious for the American consuming public, as it would have had to pay more for its fish and receive it in poorer condition.

On the other hand, there had always been a strong



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2nd Vice-President, C.F.A.



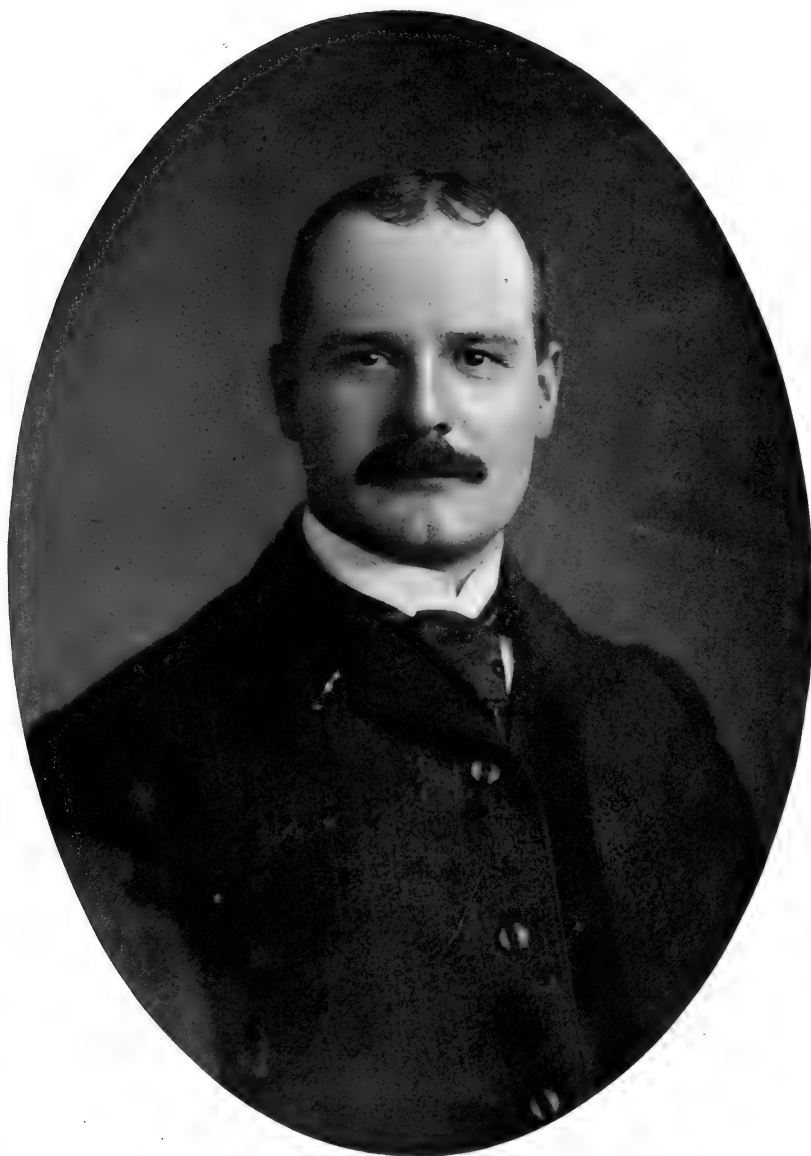
ARTHUR BOUTILIER, Halifax,
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CAPTAIN F. W. WALLACE, Ottawa,
Secretary-Treasurer, C.F.A.



W. R. SPOONER, Montreal,
Chairman, Transportation Committee, C.F.A.



F. T. JAMES, Toronto.
Chairman, General Improvement Committee, C.F.A.



H. B. THOMSON, Ottawa.
Chairman Canada Food Board.

feeling in British Columbia against granting American fishing vessels any privileges there. It was urged that so long as there was a duty on fish going into the United States, American companies operating in British Columbia had an advantage over competing Canadian companies shipping to the United States to the extent of the duty, and after the duty was removed, it was felt that our geographical advantages for carrying on the fishery are so great, that if they were not shared, American fishing vessels could not continue to compete.

As was previously shown, all the past negotiations between the two countries contemplated fishing and full port privileges to American fishing vessels in Canadian waters in exchange for free access by Canadian fishermen to the United States markets, and following the modification in the United States tariff, by which fish were admitted duty free into that country, the United States Government requested that all the privileges covered by the *modus vivendi* licenses, should be extended to all their vessels, no matter how they might be driven, and at a nominal fee. No fishing privileges were asked for.

These conditions constituted one of the main series of problems before the International Fisheries Commission.

At the instance of the Commission, action was taken during the past winter, by both governments which settles these questions for the term of the war, some of which have been causing friction, at times approaching open conflict between Great Britain and the United States, ever since the Republic was established. As the Commission has not completed its work, more may not be said in regard thereto at this moment.

Returning again to the International aspect of the fisheries, it is interesting to note the conditions in the North Sea.

While earlier attempts at international action to control fisheries, were made, which reasonable space prevents me reviewing here, those in the North Sea are by far the most important and the most successful.

To this marvellously productive area the fishing fleets of all the maritime European countries resorted. The fishermen of the different countries spoke different languages, and more or less used their own peculiar methods in fishing. Interference by one class of fishermen with another was common, trawlers coming into contact with drift-netters, etc., and anarchy largely prevailed. Certain foreign trawlers, particularly those of Belgium, were equipped with an implement, which came to be known as the "Belgian Devil," for cutting right through drift-nets, which they might foul. This implement was something like an enormous grapnel with three or four prongs, the insides of which had cutting edges. These were carried at a sufficient depth to the foot-rope of a drift-net, and then loop the net up and cut it in two as the trawler moved on.

The nations interested finally got together, and on May 6th, 1882, representatives of most of them signed at the Hague, what has since been known as the North Sea Convention. This Convention does not contemplate the protection of any of the fisheries of the area to which it applies. It mainly provides for the protection of a vessel already engaged in fishing from unfair interference with one coming on the grounds later; the restoration of gear accidentally carried away, to its proper owner; the prohibition of wilful damage to fishing gear by the different vessels, and the en-

forcement of the regulations by the national vessels of the contracting powers.

While changing conditions have found this convention lacking in details, it has in a large measure met the situation by establishing law and order in the fishing operation.

The parties of it were:

Great Britain
Germany
Belgium
Denmark
France and
The Netherlands.

It is interesting to note that this Treaty appears to have established international acceptance of the three mile territorial belt. Norway and Sweden which still contend for a four mile zone, would have become parties to it except for this contention.

Territorial jurisdiction over the seas had been a complicated question for centuries. Away back in the year 1200 we find that King John claimed jurisdiction over the "British seas," whatever might have been involved in that term. About two centuries later the Pope issued a Bull dividing the seas between Spain and Portugal, Spain becoming ruler over the Pacific and the Gulf of Mexico, while Portugal was to have the Indian Ocean and the Atlantic, south of Morocco. In 1609 King James, by proclamation, forbade foreigners from fishing on any of the British coasts, excepting under license to do so, but it was not until the North Sea Convention was signed, that international recognition was given to a fixed area.

As steam trawling developed, a system grew up of sending collecting boats out to the trawlers, on the fishing banks, and taking over their catches, so that they could keep on fishing instead of having to lose time in running frequently to port. Hence many trawlers remained on the fishing grounds for long periods at a time.

To supply the needs of these, the practice of sending out vessels which were in a sense floating retail stores grew up, but these vessels did not limit themselves to selling clothing, tobacco, etc., but did a large business in the sale of liquor, to the fishermen. When they could not obtain money in payment they would accept fish. The temptation to dishonesty was obviously great, and scenes of drunkenness, violence, insubordination, recklessness, etc., were frequent.

To put a stop to this the same powers that signed the North Sea Convention, agreed on the 16th of November, 1887, to a treaty known as the "North Sea Liquor Traffic Convention." It forbade ships not having proper licenses from selling liquor or tobacco to fishing vessels. In practice the issue of these licenses is limited to vessels employed as "hospitals" or "mission" ships. These will sell liquors only as they are needed for medicinal purposes and the consequence has been the absolute disappearance of the vessels known as "coopers," that were carrying on this illicit trade, and very largely the disappearance of the evils that followed in their trail.

Apart from the interest that attaches to these Conventions from a fisheries standpoint, generally, they indicate a direction of action that it may yet be found expedient to take in connection with the fisheries of the marvellously rich banks on this side of the Atlantic, as different methods of fishing thereon develop.

Our efforts in connection with international regu-

lation of the fisheries, have so far been from a different standpoint, viz., the protection of the fishery itself, which in Europe has up to the moment been surrounded with too many difficulties to prove feasible.

Our achievement thus far is confined to the case of the fur-seal fishery of the North Pacific Ocean.

While pelagic sealing, or the hunting of seals at sea, is a legal method, vindicated by a court of arbitration, there can be no question that it is a highly improvident one, as it admits of no selection, and in experience, seals carrying young or nursing mothers formed a large portion of the catch.

By the Pelagic Sealing Treaty of 1911, between Great Britain, the United States, Japan and Russia, this method of sealing has been prohibited over approximately 12,000,000 square miles of high seas. Seal killing is thus confined to operations on land, where selection can be made almost as readily as amongst a flock of sheep, and none but the surplus males are taken. The different countries share equitably in the returns.

As a consequence of the protection involved the herds are rapidly increasing to the maximum of production the rookeries or breeding grounds will stand, notwithstanding that many more seals are being killed annually, than would have been possible by land and sea, if pelagic sealing had been allowed to continue.

No apology is needed for referring to the pelagic sealing industry, as a fishery, for while a "seal" is not a "fish," the industry partook of the conditions surrounding a fishery and was everywhere known as such.

This leads up to the other main problems before the International Fisheries Commission, viz., the protection of our vanishing halibut fishery on the Pacific Coast and of the sockeye salmon fishery of the Fraser River system. As was previously stated, off the Coast of Washington State, British Columbia and Alaska, there existed the most wonderful halibut fishery the world has so far known, but as the halibut is a slow growing fish—investigations indicating that not more than 50 per cent of them have reached maturity at even twelve years of age—it could not stand the exceedingly intensive fishery that has been carried on for the past fifteen years. The southern banks have been so depleted that the number of mature fish thereon has become so small as to threaten the future of the banks.

While the question is much more difficult to deal with than it would have been some years ago, owing to the development of other deep sea fisheries on the same grounds that are frequented by halibut, it is not complicated by a number of nations being engaged in this fishery. It is shared by Canada and the United States alone, and owing to the locations of the banks it is extremely improbable that the fishermen of any other nation will visit them.

The Fraser River is potentially, the greatest sockeye producing river on the entire Pacific Coast.

There are five species of salmon—commercially speaking there are six—frequencing the Fraser and several other Pacific Coast rivers, but by far the most valuable of these on the markets, so far, is the sockeye. The flesh is of a much deeper red color and is more oily than that of the others.

These salmon mature at different ages, but they all die after spawning, so that they reproduce but once.

The sockeye salmon of the Fraser river is a four year fish. That is it matures and returns to spawn when it is four years old. It is true that some of the specimens mature in three, and some in five years, but the four year fish greatly predominate.

The sockeye are hatched in the fresh waters, usually of the streams flowing into the lakes, tributary to the main river. They go down to sea when they are young, and when they reach maturity they come back to the watershed in which they were hatched—it is now commonly claimed, to the exact tributary—to spawn and die. In coming in from the ocean through Juan de Fuca Strait, they enter on both sides of the boundary; but after passing the southern portion of Vancouver Island they move over to the State of Washington side, and do not emerge from it until they approach the entrance to the Fraser river, so that most of them are caught on the United States side. Obviously therefore, joint action by both countries is necessary to properly protect the fishery.

From the earliest records, which go back to 1806, the Fraser river has had the peculiarity of an exceedingly heavy run of fish every fourth year, followed by three small-run years. There are different theories as to the cause of this, which space for, this paper forbids reviewing.

While the catches of the "big" run years were enormous, owing to the tremendous numbers of the fish running in these years, sufficient escaped to the spawning beds beyond, to keep up the runs undiminished. In the last big year, 1913, no less than 2,357,695 cases of 48 lbs. of fish each, were packed on the United States and Canadian sides.

In the "off" or small run years too heavy a toll of the fish has been taken, and the number reaching the spawning grounds has been growing less, so that each year was essentially holding in store a diminished run for the coming fourth year. What the state of depletion in the "off" years is, will probably be best appreciated by pointing out that while the total pack of sockeyes in this system, in 1913, the last "big" year was 2,357,695 cases, in 1916, it was but 112,031. In dollars this would mean a market value of about \$35,000,000 as against about, \$1,680,000, with an almost certainty of the catch of 1920 being seriously less than that of 1916, and so on.

But in 1913, a "big" run year, a disaster happened in a very simple way. During the building of the road bed of the Canadian Northern Railway along the side of Hell's Gate Canyon—a narrow portion of the river, where the water rushes between two almost perpendicular walls of rock—blasted portions of the rock went into the river, and while no one—fishery expert or engineer—would have anticipated the result, a small pocket like bay, just inside of a projecting rock at the entrance to this canyon, and which forms the Gate was filled in, and it subsequently transpired that it was owing to this little pocket that the salmon were able to make the passage, as when they rushed through the Gate, it gave them a resting place to regather their strength, to make their way through the remainder of this difficult channel. With this bay gone they could not do so and fell back exhausted.

When this was discovered, the best engineers available, were hurried to the scene to consult, and work to overcome the difficulty was immediately started, and a good many salmon got up but not more than in a good "off" year, and so the year 1917, which

should have been a "big" run year, was only equal to a good "off" year, and the "big" run years are at an end.

What this river can produce every year under proper conditions, must be measured by the results of the "big" years of the past. On the other hand, unless the situation is taken in hand the fishery must soon pass into commercial extinction, or in dollars, thirty cold millions against nothing.

The restoring of this system to a maximum state of productiveness is nationally and internationally a problem of great importance, and is one of those that is engaging the attention of the International Fisheries Commission, but as the Commission has not yet entirely completed its labors, more on the subject may not be said.

In closing let me emphasize the great need of extensive and exhaustive scientific investigation of the conditions affecting our fisheries. A start has been made by the Biological Board, but vast fields remain to be traversed.

As this work is mainly on the high seas it has an international significance. It was a realization of this fact in Europe that led in 1902 to the formation of the International Council for the Exploration of the Sea with headquarters at Copenhagen. Preliminary conferences had been held in 1899 at Stockholm, and in 1901 at Christiania. The primary object of its investigations is to ascertain facts upon which to base International agreements for the preservation of the fisheries, but they are conducted generally so as to acquire knowledge, both of the physical condition of the sea and of marine life, which may prove the means of assisting and developing the fishing industry.

The main lines of work taken up were:

- (a) General and special statistics.
- (b) Special fishery and biological statistics.
- (c) Occurrence and distribution of eggs and young of food fishes.
- (d) Migration of older fish.
- (e) Fish food investigations.
- (f) Hydrographical investigations.

All the European countries except France were represented on the Council, and also the United States.

The Council did much valuable work, but its investigations were practically suspended by the war. What its standing will be when peace is resumed cannot now be stated.

D. J. BYRNE: I think the only comment I would like to make is that I regret the findings of the International Commission have not been made public, so that Mr. Found would be free to carry on the work in his paper and give us the results of the recent meeting of the delegates from the United States and Canada, in which work Mr. Found was actively engaged and has followed from start to finish. It will be of great importance to the fisheries of America in general, in future, and while we can quite understand Mr. Found would not wish to go into the matter on account of the Commission's report not having been presented to the parliaments of the two countries, still it is regrettable we could not have the finish of that paper, which I hope at some future time we will be able to induce Mr. Found to give us.

MR. HARPELL: As one of the later students of the Canadian Fishery history, I know how much we have lacked a collection of the data such as Mr. Found has given us tonight, and I am sure that paper will stand as one of the leading historical collections and compilations of historical data that we have. There are several questions growing out of the paper that might be taken up and discussed. I would like to mention one: In Mr. Found's excellent paper he referred to the Halifax Convention which settled the differences between the United States and Canada by the payment of some \$5,500,000, which has been dealt with in various ways. That is a permanent endowment, and the revenue from that has been dealt with in different ways and, of course, calculated for the development of the fisheries. These ways no doubt were admirably appropriate at the time they were instituted but, as Mr. Found has pointed out, times are changing, so that many of these old payments are out of date, and I think there is some opinion among the members of the Fisheries Association that the appropriation of some of that endowment might be amended and altered to be more beneficial to the commercial fisheries. Part of the proceeds of that endowment are paid in bounties, which I think are not as productive and as helpful to the commercial fisheries as they have been in past years. And there is a lot of work opening up before the fishing industry as a result of the new development. One of them is the result of the encouragement of the trawler; better and more scientific knowledge; increase of the areas frequented by the different species of fish at different times; all of which information would be helpful. As a matter of fact, as the development goes on, this will become more and more necessary. The carrying on of the scientific work is one of the new fields that is being opened up, and one of the possible methods of utilizing some of the proceeds of this endowment.

MR. SHORT: I have always understood when that award was made at Halifax, one of the conditions was that the investment of that award was to be distributed among the fishermen of the Atlantic coast, and therefore I do not see that any influence we might bring to bear on the government they could not change the conditions. That has always been my understanding.

W. A. FOUND: No. The award was made in 1877. If you go back over the record of the discussions in the House of Commons at the time, it was decided at the time that the money should go into the Consolidated Revenue of the country; it did not belong to the people of the Maritime Provinces any more than any other portion of the country. It went and remained there untouched for some two or three years. I think it was in 1882 when the appropriation was made by Statute providing for an amount which was considered to be equal to approximately 3-1-3 per cent on the amount of money; that was not stated in the Act, and only came out more or less in discussion; it was fixed by Statute; it comes up in the estimates every year.

THE PRESIDENT: My understanding of the award was the interest belonged to the people who had suffered by the fishing done by the Americans, which is considered to be coast fisheries. I understand they took the money and did not pay any bounties to the fishermen at all.

Mr. A. H. Brittain's Address:

MR. A. H. BRITTAİN, read a paper on "Transportation."

TRANSPORTATION.

By

A. H. BRITTAİN,

Vice-Pres. and General Manager, Maritime Fish Corporation, Limited.

I am sure, we have all listened with great interest to the able papers which have been presented to this convention, and it now falls to me to give you a paper on transportation, as applied to the fishing industry. I fully admit that I have taken a deep interest in transportation matters, as applied to the fishing industry in Canada, and at the same time I realize that this is a vast and broad subject, and I hardly feel that I can do justice to a work of this kind, especially when transportation men have given their life study to this work.

I believe it would be more to the point, if I confined my remarks to the transportation of Fresh, Frozen, Smoked, Salted and Pickled Fish for consumption in Canada.

I am strongly convinced that the success of the development and increased consumption of fish as a food in Canada, is coupled with the transportation system, and unless the transportation of this perishable food is properly worked out, there will be very little hope for increased consumption and wide distribution.

It cannot be disputed, that we have on both the Atlantic and Pacific Coasts, fish food equal to any produced in the world, and we have fishing areas and famous fishing banks, which are capable of producing enormous and practically unlimited quantities of fish food.

In the past very large quantities of fish have been salted, in fact that has been the principal method of handling these fish foods, but there is no doubt whatever that there is room for great development in the movement of these fish, in a fresh or mildly cured form, to the inland parts of Canada as well as to the United States.

I think I would be perfectly right in saying, that next to the producing of these fish foods, the next and most important item is the movement of this fresh fish product to the markets.

To bring these fish to the distributing centres and to the markets, they have to be carried on fast freight trains, as well as by express, and I have yet to be convinced, that any one of these methods alone can move the products in a satisfactory manner. To illustrate this point further, it has always been my conviction that the express movement of fish has been the introductory or the development movement of fish, in centres where fish is not being distributed, and it has been further illustrated by actual practice within the past few years, that in centres where fish has had good transportation facilities by express, the educational part of the work has been carried on, and eventually movement of these products has gone forward by fast freight in carload quantities. I think no better illustration can be brought forward than to illustrate the movement of fish from the Pacific to points in the Eastern parts of Canada within the past ten years.

I think everyone, whether directly interested in the fish business or not, has heard of the large quantities of Pacific Halibut and Salmon which have moved by

express to the inland parts of Canada, as well as to the New England centres of the United States and to Chicago as well. This movement was inaugurated by the Transportation Companies when they were looking for business to develop their roads, and by supplying suitable equipment to travel on passenger trains, an experiment of one carload of Pacific Halibut was sent through to the East, and later when this product became known, and it was demonstrated to the public that the Pacific Fish could be landed in centres such as Montreal, Toronto and Buffalo in first class condition in iced refrigerator cars, the business from that time grew steadily, and in place of one car, we have read on many occasions in the Press, that train loads of fresh Halibut were dispatched by express to the inland centres, creating an active consumption and a large business for the Transportation Companies.

Later, operators and producers of fish, realizing that the fish could be transported by freight, invested large sums of money in Cold Storage Plants, to enable them to freeze the surplus products arriving at times when the catch was large. This did not interfere with the movement of Fresh Fish by express, but it meant that during the bad weather, and when the fishermen were landing smaller trips, there was sufficient frozen product on hand to take care of the demand. This frozen product was then shipped by fast freight from the Cold Storage Plants in refrigerator equipment, and transported to its destination in the same condition as the fish was shipped, and immediately placed in Cold Storage at the distributing centre, for re-shipment to the smaller towns and cities.

My principal object in bringing out this illustration, is to try to show that this consumption of fish would never have developed had it not been for transportation facilities with express and freight movement combined. To-day, the movement by freight on fish from the Pacific Coast is an item producing large revenues for the Transportation Companies, and I am safe in saying will be increased, and help to furnish tonnage necessary for the up-keep of the Transportation Companies.

I will now refer to the movement of these products from the Atlantic, as I think a great many of those present are especially interested at the present time in the movement of fish foods from the Atlantic Coast.

We have off our shores on the Atlantic, it is claimed, the largest fishing grounds in the world. These fishing grounds produce enormous volumes of the well known varieties of fish such as Codfish and Haddock, and there is one particular feature which I think is of great importance, and it is that we have not only these staples, but also a large variety of the finest kinds of other fish foods available.

We have Herrings in unknown quantities, we have the Mackerel, we have Flatfish of all varieties, we have the far famed Atlantic Salmon, in fact we have, right at our doors, almost every variety of Sea Fish known. These fishes, outside of the staple lines such as Cod and Haddock, school along our shores, in our Bays, and during the season are taken in enormous quantities.

Unfortunately, the fishing industry is one which cannot always be regulated to effect uniform and steady supplies, and for this reason it has perhaps been difficult to get the Transportation Companies to understand that this is a business which will fluctuate, and at times large quantities will be available, and at other times, owing to weather conditions, the supplies will be limited.

The point which I endeavored to illustrate in connection with the Pacific Coast, can be well applied in the case of fish from the Atlantic, but I am sorry to say that owing to lack of proper refrigerator equipment, the business from the Atlantic has not developed as it should. Fish shipped from the Atlantic is closer to the large markets, but through lack of proper equipment, it was not possible to get these products through to destination in good shape, consequently very large quantities have been salted and exported to other countries.

I am not trying to depreciate in any way the Transportation Companies, because I believe that within the past few years, greater strides have been made than ever before, owing to the fact that the Railway Companies operating in the East have a fairly good supply of refrigerator equipment, for movement on freight trains, but it has only been within the past year that the fishermen, producers and shippers of Fresh Fish have been able to send forward their products by express on passenger trains, under refrigeration.

During the summer months, it is absolutely essential that Fresh Fish shipped by express should go forward under refrigeration, and it has been thoroughly demonstrated, not on one occasion but many occasions, that Fresh Fish shipped by express under refrigeration will keep in good condition at least three or four days longer, in fact I should say a week longer, than fish shipped in the ordinary baggage cars without refrigeration. Many tentative schemes have been tried out, with a view to properly developing this business, but in my opinion, a great many of these schemes have not been given sufficient time to bring them to a final conclusion.

It is my own opinion, that the most successful scheme with a view to having fish arrive at destination in first class condition, was the building of two or three cooled express refrigerator cars to transport the fish products on passenger trains, and I believe I am safe in saying that not only was this movement a success, but the only trouble was that there was not sufficient equipment to take care of the business offering. What did this mean? It meant, that one part of the country would get their fish sent forward under refrigeration to arrive in first class condition, and another Town or City have their fish go forward for express in a box baggage car and the product arrives in anything but first class shape.

It may be contended, on the part of the Transportation Companies, that the fish business is not of sufficient volume to warrant capital expenditure, but I contend that there is to-day sufficient movement of Fresh Fish to warrant expenditure on equipment, and until such time as this equipment is available, this tonnage will not increase as quickly or as rapidly as it should.

I feel, that at a time like this, when fish is given such publicity, and when the public are being asked to use fish in lieu of meat, that the Transportation Companies should seize upon this opportunity to furnish equipment and service, to develop the industry which would be permanent and lasting as a revenue producer.

I am not able here to furnish you with figures as to the volume of Fresh Fish shipped from the Maritime Provinces but I think I am safe in saying that there is to-day more fish shipped from the Atlantic than there is Halibut produced from the Pacific. Even with this, the movement is comparatively small, compared to what it would be under satisfactory conditions.

I have it on very good authority, that from one shipping port alone in the East, over twenty-three million

pounds of fish were supplied during twelve months, with a revenue due the Transportation Companies of over one thousand dollars. What is said of this one port, I am safe in saying, can be said of many other shipping points in the Maritime Provinces.

What does this twenty-three million pounds of Fish represent in tonnage to the ordinary individual? It represents eleven hundred and fifty cars, at twenty thousand pounds each.

I do not feel that this is my place here, to go into too much detail, neither do I feel that it is within my rights to make any definite suggestions, as I believe this matter will be dealt with by the Committee appointed for this purpose, but I would strongly urge upon all those interested in the industry, and upon the transportation people themselves, the necessity of fair and reasonable rates, as well as proper equipment to take care of what could be made one of the biggest natural resources in our country.

Let me just briefly touch upon the question of rates, for the movement of this product. I have had some figures given to me, which show that since the year 1914 the freight rates on Fresh Fish have increased in carload lots some 40%, and is less than carload lots 78%. In a recent judgment issued by the Board of Railway Commissioners, further increase in rates will go into effect, which will practically mean an increase from 1914, on carload lots of fresh fish, of approximately 75%, and in less than carload lots 122%. We must all remember that fish is a low priced article of food, and as such should be carried by the Transportation Companies, practically on the same basis as meat, but the price of fish is not anything like that of meat, no matter what is said to the contrary.

The fisherman stakes his life to produce fish, he goes to sea in all kinds of weather, and has to be strong and hardy and capable of standing all kinds of hardship. He is the farmer of the sea, and as such he should be properly remunerated, and to furnish the fishermen of the Atlantic and the country with revenue, he should be able to transport his product, and thereby create a demand for everything he can produce.

Does it ever occur to you, gentlemen, just what this increased consumption and production of fish means to transportation? It not only means a heavy movement of fish products put up in different forms, but it means a large movement of other materials used in the fisheries; a movement of all classes of products from all classes of manufacture, and I believe, speaking broadly, that the fishermen or the fishing industry is one of the best customers of all classes of manufactured products.

The fishing industry in the Maritime Provinces has invested large capital. They have invested capital in equipment, cold storage plants, and are large employers of labor and purchasers of all classes of products. They are ready to make further expenditures on equipment and plants, and to keep pace with the industry it is the duty of Transportation Companies to furnish the equipment and the service, which no individual corporation, firm or fisherman can do.

Mr. N. S. CORNELL (Port Stanley): Our situation is very much different from the situation set forth so ably by our friend Mr. Brittain. Seventy-five per cent of our fish finds a market in the United States. That being the case, the difficulty with us arises largely with American transportation companies. For instance, shipping fish to New York—the major portion of our surplus which is not distributed in Ontario goes

to New York. After leaving Buffalo the delay seems to be there, and we have had a very bad service as far as that is concerned. A deputation from the Lake Erie Fishermen's Association went down last Monday to interview the Food Board at Ottawa in reference to this matter, and they have promised to do whatever they possibly can. We heard from them, when they referred the matter to the authorities in the United States, that they say we are suffering no more than the producers on the South Shore of our lake, or very little more. That does not relieve the matter at all. For illustration: In that statement, verified by individual instances—we made the statement that 40 out of 75 per cent deteriorated in value; it was put on the commission market of New York and fetched very much less than it otherwise would have fetched; and 25 per cent of the total shipment to the United States was a total loss. Under the conditions we are living under now, where we are admonished in the press and the pulpit and on the platform to do everything we possibly can to not only conserve but produce food, we are trying to do it. I am glad to hear the seamen say they are trying to do it. There is more or less of a feeling among Canadian fishermen and Canadians generally. They ought not to pay so much attention to us Lake people, because they say your fish goes out of the country.

Are we not all engaged in the one cause? The only cause, practically speaking, that ought to be considered, and when we are relieving the situation in the United States to furnish the kind of fish they want to use, we are relieving the situation whereby there is more bacon and beef and more grain and wheat goes to not only support the men from the United States in the war, but the whole of our Allies, and we think that just as much consideration ought to be given to lake traffic, notwithstanding that the major portion of that fish finds a market in the United States. That is why we want the co-operation of this Association with us. We are willing to help you in every way we possibly can, and we ask you as brother fishermen to help us in this matter of transportation.

MR. SHORT (Digby): The matter of transportation is so important today, and is such a vital question in connection with the fish business, I think everyone should do everything we possibly can to assist it in every possible manner. Mr. Brittain has brought out some very good points indeed in connection with the transportation of fish, but there is a great deal yet since it has been formed, a great deal to facilitate the transportation of fish, but there is a great deal yet to be done. We are only just beginning. There is a matter that I am more directly concerned about, and I want to speak of, because there are several Members of Parliament here. The matter of rebating on express shipments. Some years ago, I think it was in 1898, the government of the country at that time decided that it would be a good thing to assist the fishing industry and to create a market for our fresh and smoked fish in the Upper Provinces, that they decided they would pay one-third of the express charges to the Upper Provinces, through Quebec and Ontario, but not to Manitoba. That worked so well that our shipments increased by leaps and bounds. Previous to that regulation going into effect there was practically no fresh fish shipped from the Maritime to the Upper Provinces; it was all in the hands of our American neighbours. Our duty at that time was $\frac{1}{2}$ c per lb.

on fish; the express rate between Boston and Portland and Montreal and Toronto was $\frac{1}{2}$ c a lb. less than the express charges from the Maritime Provinces, and that absorbed the duty. Consequently we could not get an order for fresh fish in this country at all. I think it was when Mr. Fielding was Minister of Finance, he came down to Nova Scotia and held sessions to hear the views of the business people with reference to the tariff changes; and the Secretary of our Board of Trade, Mr. Jamieson, who afterwards became Member, read a paper before that commission and presented the views of the fishing industry of our part of the Province and the next year the government very wisely decided it would be a good thing to assist this industry by rebating one third the express charges. They did so, and as I said before, our business increased by leaps and bounds until today we have that market entirely in our hands. There is very little fish of the kinds we produce down here imported from Boston and Portland, except when we are under weather conditions here and cannot produce it. If they decide at the present time that they will take off that one-third rebate for three days of the week because in the Eastern part of the Province they have started what they call a Seafood Special, that is practically shipping by freight at express time; it means two days from Mulgrave and Halifax to Montreal, at freight rates.

But we in the Western part of the Province and in St. John and St. Andrews, all of which produce large quantities of fresh fish, and Yarmouth, we cannot connect with that train at all. It is no use to us whatever. I contend that this is a most inopportune time for the Government to pass any such regulation as that to cut off a part of the province from the rebating system, when we cannot use the Seafood Special that runs from the Eastern part of the Province, and we are asked by the Food Controller and the members to produce more food, and we are putting forth every effort, and the Government should assist us in every way to get the food to the people as cheap as they can. Since this regulation went into effect, so far as our territory was concerned, Saturday was one of our best days for shipping, because the goods got to the market the first of the week; since that regulation went into effect we do not ship a thousand pounds a week on Saturdays. In that section of the country we have lost the trade, and it is a gross discrimination against that section of the country. I think the Government should put that regulation back into force again for those three days, or give us the same facilities on the C.P.R. as they have put on the Government road. We cannot use the Government road because we have no connection, but if they give us the same facilities on the C.P.R. as they put there, I say take the rebate system off every day in the week; but they have not done that. They are giving the Pacific coast rebating of two-thirds on certain lines of fish; not halibut and salmon, because nobody wants them to do that, but on the other grades of fish they are rebating two-thirds, and in one section of our Province they are taking off the rebating system that has been in vogue ten years, and it is a most inopportune time as now every assistance should be given to the fishing industry to produce and market their goods.

MR. SPOONER (Montreal): I support Mr. Short in his contentions in reference to the one-third rebate. There is no question his section of the country is be-

ing discriminated against. But I think that this one-third rebate might better have been left on until after the conclusion of the war. We are all doing our level best to develop the business, and trying to get all the fish we can and market all we can, and we are not charging exorbitant prices and are selling as low as we can, and in talking with our Transportation Committee different times, we have felt it would be to the interests at large if the one-third rebate was continued until the completion of the war. This Seafood Special is a splendid service when we have the fish, but the trouble is, the fishing is uncertain; some days we have it, and some days we have not. When we have the fish, and have that special, we certainly make use of it to its full limit. I think probably Mr. Found, having heard the expressions, will reconsider the Order-in-Council that has been passed and cancel it.

MR. BYRNE (Montreal): One point Mr. Brittain made, which I thought was a strong point, was to refer to the express as a precursor of the freight service. The method employed by the Government in assisting in the payment of the charges had a two-fold object: To make the cost of transportation as reasonable as possible with a view to inducing greater consumption. The other point was that there was always a tendency to ship by freight, in view of the saving of charges. Consequently, the product did not reach the distributing centre as good as it should because the transportation was not as good as at present. The dealers in the Eastern part of the Province of Nova Scotia, who have the advantage of the Seafood Special service will use it, and it is not reasonable to suppose they would want to ship by express on days when they can use the Seafood Special, while another section of the Maritime Provinces—which also affects New Brunswick—is unable to take advantage of that service. I claim on that account, the work of the Seafood Special, which tends to increase consumption or aid in quick transportation of fish, should not be offset in any way because the Government, as Mr. Short put it, has requested that we increase our production to the greatest possible extent, and the express service is still required and will not be used by dealers who have access to the Seafood Special, so the removal of the Government assistance on the day the Seafood Special moves out would not affect that section, because shippers would not use it on those days, yet it does affect other parts which have not that advantage. I hope the Department may be induced to reconsider that decision for the present and permit us to go on with the work which was requested by the Chairman of the Canada Food Board to increase production during the period of the war.

MR. BRITAIN: I would like, if it is possible, while we have Mr. Found with us to get an expression of opinion from him. I don't want the thing to die down. We are going to keep on. Either withdraw rebates entirely—take it off the Atlantic and the Pacific—fish is being laid down in Winnipeg, the ordinary cheap classes, for 35c per 100 lbs. from the Pacific coast. It is no wonder in the world they can sell fish for 10c. If the Government has no money, if they are not out to assist the industry, get away from it and leave it alone, and let us work out something that will work out, and work it out on a basis that will develop it. I admit this rebate has been a good scheme. It was given to the people and not to the shippers. At the time it was distinctly understood

this rebate would go into effect and the small dealer would get the benefit of the one-third rebate to enable him to sell the products and introduce thousands of tons of sea fish of the Atlantic and Pacific to the public. The Pacific business does not need any encouragement. They have the equipment and they have service and rates, and it has built up the halibut and salmon business, and it is equipment and service that has built up the business from the Pacific. We have not had that service on the Atlantic. It is a crying shame; you will send forward 500 pounds of fish by express on Saturday morning, and it will arrive in Montreal Sunday night, and on Monday morning that fish was heated; it went by freight and arrived on Tuesday, and I have it from one or two gentlemen here to-night that that fish was the finest haddock that ever reached Montreal and a credit to the Atlantic Ocean. This man had to have the 500 lbs. on Monday morning, and the only way he could get it—he could not send it on the Seafood Special, because he didn't know on Friday how much that man required for the troops, and he therefore ordered it Friday afternoon to send forward by express on Saturday, and arrived Sunday night in a heated condition. The storekeeper practically almost lost the contract. He lost the confidence of the Militia people, and I am safe in saying it will take years and years to get back the sale of that class of fish to the people. We had no control over it whatever. You cannot ask the express company to put on a refrigerator express car for one or two thousand pounds. The Seafood Special takes care of the fish for Montreal for volume, but there is business at times that has to be carried all by express. It is the advertisement department of the fish business, and it will develop into car load movements, and in a short while, in a few years, we will put fish on the map and we won't need assistance. I don't want to ask the railway companies to give us rates which are too low: they have to get their revenues. And they are getting them; 122 per cent on less than car load lots and 75 per cent on car load lots, and they must deliver the goods and put on the service. We can't do it. We do our part. The fishermen are landing the finest haddock: the firms have the cold storage plants; steam trawlers, and a large capital invested and we cannot go further; we cannot build railways or operate them; we are depending on the railway companies.

MR. JAMES (Toronto): The rebate on the fish from the Atlantic was a very good thing. The same thing applies to the Pacific coast. They were wasting thousands of pounds of fish that never found a market; and the two-thirds rebate is a grand thing for the Western Province. As far as rebating goes in Ontario, I don't agree with the Order-in-Council, where it discriminates against the balance of Nova Scotia and different shipping points with the same facilities.

CAPTAIN WALLACE (Ottawa): I agree with Mr. James and disagree with Mr. Brittain, regarding the Pacific two-thirds rebate. These were fish there was no market whatever for; they were thrown away by the fishermen: when the Western Provinces were asked to eat fish, and the only fish was halibut and salmon, we had to find a substitute. The Government made arrangements to utilize this wasted fish. In order to get the fish into the Western Provinces, to the Eastern boundary of Manitoba, it was necessary to make a popular price. We could



C. F. A. Delegates at Consumers Cordage Co., Ltd., Dartmouth, N. S.

not do that unless we had assistance from the Department of Marine and Fisheries to subsidize the transportation, and they offered to pay two-thirds which enabled us to bring the fish in at popular prices. Since that was inaugurated there is about 400,000 pounds per month of flat fish and cod being consumed in the Western Provinces and in another year it will be doubled. More trawlers will go out from Vancouver, Rupert and Steveston, exclusive for that fishery. This assistance has built up an entirely new fishery on the Pacific coast. The halibut fishery is done, and the two-thirds rebate is a very material assistance, and I don't think any one in the fishing industry should register any kick about that small assistance being given.

MR. BRITTAIN: I don't think it is fair to bring out the fact that I am against the rebating from the Pacific. I did it more to illustrate the fact that the Pacific today could lay fish down with this two-thirds rebate at 35c per 100 lbs. The rebating system of two-thirds is on express shipments on car loads and less. This fish is being retailed for 10c in Vancouver; it costs $\frac{1}{2}$ c to bring it to Winnipeg, that makes it $9\frac{1}{2}$ c a lb. The retailer is supposed to get 3c a lb. profit on the fish; that was the arrangement made with the Food Board, which I was a party to, offering to do the same thing from the Atlantic coast. That gives $6\frac{1}{2}$ c a lb. for your fish. We are today offering the same class of fish for a cent a lb. cheaper than out there. But we cannot get our fish to market. It is not a question of the rebate, it is a question we cannot get our fish to the market. How many people have had fish shipped, and it has arrived in a heated condition. That makes you say you cannot do the business.

MR. FOUND (Ottawa): I feel somewhat like Mr. Brittain. We have had many hours, and days and weeks of discussion, working together, not only with him, but with all the other big companies in the country, trying to devise ways and means of transportation. This only starts at the beginning, and it is liable to take more time than patience will admit of. The position was this. Prior to 1907 the fresh fish business so far as the shipments from the Atlantic coast to the interior are concerned, and from the Pacific coast are concerned—I am speaking of shipments to United States points, it was in the first instance to Boston and New York and the shipments supplying Montreal were in a measure going from Vancouver to Boston and New York on a 3c basis and shipped back to Montreal and Toronto. So that prior to the date I am speaking of the business was in a languishing condition. The Government set the Department to work to see if something could be done to try and stimulate the industry. The question was taken up with the companies and it was felt the express facilities were inadequate from both coasts. Prices were unfair and did not enable the business to be done, when one considers the express rate from the Maritime Provinces, outside of St. John, \$1.50 to Montreal, against 80c from Portland—rates are matters I am not very much skilled in, but you can see where the competitive rates come in. Take Portland and St. John, the express rate from St. John was \$1.30 to Montreal. It was competitive with Portland. An appropriation was procured in 1907 to try and do something. The express companies could not be moved. It was taken up with the C.G.R. and assistance was asked by fast

freight. But the railway did not find it paid to place transportation facilities at the disposal of the dealers for the shipments they made, excepting the arrangements from Mulgrave, the shippers guaranteeing the earnings of the car. The business was started by the Government guaranteeing the earnings on one car from Halifax and Mulgrave one day each week. We made a practical express arrangement with the C. G. R., whereby a refrigerator car was attached to the Maritime Express one day each week. The dealers took delivery themselves. It looked good on paper and was cheerfully gone into by the dealers, but it was proved it had to do two men's work. The express facilities had to be made available. The department recommended, knowing at the time what it was doing, that by accepting responsibility for one-third of the express charges it would be a difficult matter to discontinue. It was discussed with all these gentlemen here and they will remember as well as I, it was hoped that five years would be the limitation of the time when this express assistance would be required. However, the placing of the express facilities at reasonable rates at the disposal of the dealers gave us all a very cheery impression of what the Canadian fishing interests can do when given a fair chance. They immediately started to do what was regarded as impossible, to build up a big business in the interior. The shipments from the Atlantic coast began to come along. The business began to develop from the time that one-third assistance was given. That gave a rate from the Maritime Provinces at a net rate of \$1.00 against \$1.25 from Boston. The business has gone on in a way that has been on the whole eminently satisfactory. All credit must be given to the Canada Food Board for what it has done since it has been inaugurated, in helping to extend the demand for fish. They have co-operated with us in the most cheerful way in every phase of the work. I think the Canada Food Board will agree with me when I say it was owing to the assistance that had been given during these years that enabled them to seize the opportunity that lay at their doors. The business from the Pacific coast came up in car load lots; halibut and salmon assistance was not further required. It was absolutely withdrawn last year.

The position is one that everyone will readily understand. The trade is getting big. If it cannot take care of itself now, the time is approaching when it will attain such proportions that it can avail itself of the best transportation rates that will be available; if these rates are too great they ought to be reduced, and no one should take from anything I say that I am arguing that anything like reasonable facilities have been made available. It is only by insistent urging we have got as far as we have. It is not lack of enthusiasm on the part of the railway either. It is not easy to overcome things.

The demand that has arisen for flat fish from the Pacific coast is possibly going to relieve the strain on the halibut and provide the people of this country with an excellent fish which was before being wasted. Millions and millions of pounds every year were thrown back into the sea. In dealing with the appropriations last year the Government found it necessary to retract in many ways and considered it desirable not to vote any more money for transportation of fresh fish this year than last. I do not think it is fair to say it is discrimination against one portion of the Province

to improve the service from another portion where that improvement can be made. It is an unfortunate condition. Every man cannot have a post office at his door. If there is a possibility of doing sufficient business from the Digby end through St. John I would not be hopeless that we might find it possible to work up an arrangement similar to the Seafood Special at the disposal of the shippers from there, and if the dealers from that end can give any indication that they can make available reasonably large shipments, at least the Department will be glad to take the question up, and the Food Board will assist in every way they can to get such an arrangement.

MR. SHORT (Digby): I am very pleased indeed Mr. Found has expressed the opinion he has, that the Government will if possible undertake to give the same facilities. We do not want concessions or favours. A business that cannot stand on its own legs should not go at all. We don't want discrimination. It is most unfair to take three days off our shipments and give it to the West. They never had two-thirds on any shipments, they had one-third, and if the Department has not sufficient funds to carry out the policy, it is unfair to discriminate against one part unfavourably to the other. We want equal rights and no concessions.

MR. FOUND (Ottawa): The reason for the withdrawal of the one-third on halibut and salmon was because this fish had become well established. I think all our fresh water men will agree with me that certain well known varieties of Atlantic fish have become well established, such as cod and haddock. Would Atlantic dealers advocate the taking off of the assistance altogether on these well known varieties from the Atlantic coast and replace it by two-thirds on what are regarded as cheap fish, equal in value and good fish, only the people don't know it.

MR. BRITAIN: The Association had no notification this was coming into effect, and they complain about that. You have done a good deal of service, but I think we should have been notified and given time to adjust ourselves to the conditions, and had we been given time we could have worked it out, and there would have been very little cause for complaint.

MR. CORNELL: I am sorry to say I disagree with Mr. Britain on something he said. He said we are going to come, and come and come again until we get this. That is not necessary. I know our dealings with Mr. Found and the Government, particularly when you present a good and proper case they give it to you. I have every faith that this resolution of the Committee as directed forward will benefit every person, and they will be only too glad to give it without coming again.

MR. BROWN (Kingsville): I come from the Westward end of Lake Erie, that is a district where the fishermen pay more for the privilege of fishing than in any other place in the world. The fishermen on the Atlantic coast, it costs them to ship fish to Montreal \$1.50 per 100 lbs.; it costs us \$2.00 to Montreal. They get a rebate of 50¢ a 100 on three days of the week. They originally got it on all. We get no rebate. The fish from the Atlantic coast enters Montreal in direct competition with our fish, and I don't see why they

should have any rebate. If they get that rebate of one-third and it costs us 100 per cent more to land our fish in Montreal, why should they not get along without a rebate. They have had four to eight years to get the fish established on the market; but when you come down to discrimination, I think that is a fair case.

MR. SPOONER: There is no question the Lake shippers have a market in the United States where they get big prices for their fish. Our fish as a rule is sold at 5¢ a lb. and the Lake fish would probably sell at three times that, and it does not cost as much to produce.

THE PRESIDENT: You said you paid more for the privilege of fishing?

MR. BROWN: Yes, and I mean it. It cost me \$1,406 for a license from the Ontario Government last year; I caught 196 tons.

MR. CORNELL: We only have half of Lake Erie to fish in; you can cross the Lake and the American people pay \$25.00 a year license for a tug; they are unrestricted as to time and quantity, and they fish out of the same lake and market the fish in the same market.

MR. BOWMAN: With regard to the grievance of Mr. Short; did this Seafood Special and the cancellation of the rebate three days in the week originate entirely with the Government, or were there some fishing industries represented in the conference that led to that decision?

MR. FOUND: I don't know how to answer that. The question of transportation has not been a closed book and the Department has been dealing with it all through. It was a matter of Government policy.

THE PRESIDENT: It came as a bolt from the blue as far as the East was concerned; we didn't get any notification. It was put through.

QUESTION: When the conference was held some weeks ago under the Chairmanship of Mr. Found, the question was mooted, but I thought it came from the General Manager of the Canadian Government Railways; if the trade thought they could make use of or would require a better or increased freight service the Government railway was prepared to give a three days' a week service and on any days the dealers agreed upon to run this special, which had been only run on one day, and last year two days. He offered to give that special from Mulgrave to Montreal on three days in the week if we required the service. The dealers representing the trade, distributors, producers, were glad to have an opportunity of increased service, and we accepted the proposition, but no mention or intimation was given at that time that the increased freight service meant taking away the express assistance. There was no mention at all, so when the notice came in the shape of the notification that an Order-in-Council was passed to the effect that on the days the special was run there would be no rebate on express shipments, it came as a bolt from the blue; we had no intimation; and we could not advise our customers.

It being 11.15 p.m. the Convention adjourned until tomorrow.

Second Day

11 o'clock a.m., Report of the Work of the Publicity Committee.

Read by Mr. J. A. PAULHUS, of Montreal.
Mr. President, Gentlemen,—

My intention is to be brief and to the point. To relate in detail all that has been said, written and done, since our last meeting would take too much of your time, and time is so precious just now. I will first summarize much of our publicity work, analyse and comment on some of it, and add a few practical suggestions, which may help to direct our activities for the coming year. Though the period I have to cover is much longer than the previous one, I intend to start with the last celebration of our National Fish Day. I don't need to say that it was a splendid success, because you are aware of it as well as all the fish community. The National Fish Day is now an established and recognized institution in Canada. It will live as long as the fish business itself. Every Tuesday, the last one before the first of November of each year from one end of this Dominion to the other, fish will be particularly in evidence. Every citizen of this country will be reminded at this time that fish is a perfect food, that our oceans, lakes and rivers can produce immense quantities of it, and that it is a patriotic, as well as an economic, duty to encourage the consumption of fish, and thereby increase the comfort and wealth of this Dominion of ours.

The National Fish Day, as well as the innovation of another Fish Day a week—Tuesdays—are the creation of the Publicity Committee of this Association. Perhaps it would be nearer to the truth in saying here, that the National Fish Day was originated by the present chairman of the Publicity and Educational Committee. At all events, both institutions are prosperous and deserving of note in this report, because they have contributed in a large measure to advance and popularize the fish cause not only amongst ourselves, but even with our neighbours, as it has been proposed to adopt in the United States the same methods in advising consuming classes to eat fish on Tuesdays well as on Fridays.

When speaking on the specific work of the Publicity Committee of this Association, shall I recall to your attention that the proposal of relief to Halifax sufferers was conceived and proposed by the chairman of the committee, and that as a result, the sum of \$3,000 was collected for the purpose. I wish to add that the Publicity Committee of this Association has done the initial work and the most arduous and persevering work towards putting the fish business and the fish interest in the forefront of the public eye and ear. Others have followed in the trail with new ideas and more will embark on the beaten track, levelling all inequalities and opening large and spacious areas which will render more prosperous the fishing industry of Canada.

One of the principal events that is recorded in publicity this year is the advertising campaign undertaken by the Food Control under Mr. Hanna's term of office, and through a committee, of which your chairman, was president. The sum of \$5,000 in round figures was appropriated and used solely to advertise in the Province of Quebec. A series of cleverly written advertisements were published for nearly two months

in the most circulated papers of the different cities and towns, both in French and English. It was certainly an eloquent and persuasive call, which has been responded satisfactorily in large centres, but with a certain dose of indifference in the rural districts. Another financial help which we owe to the liberality of the late Food Control was the grant of half the cost of fish display cases. These implements were certainly a long-time felt necessity by a certain section of the fish community. Strange to say, very few fish dealers, comparatively, availed themselves of the golden opportunity. In all, I believe, not more than 300 packages were offered to the trade in the Montreal district, and some of them are not yet distributed.

I am pleased to mention that in connection with the distribution of these fish display packages, we had good assistance by the Municipalities Association. A little later, the cash and carry system in the fish business was introduced and commented by Captain Wallace. Though only a recent innovation, many stores have adopted the system and there is every indication that the cash and carry system will become universal in a short time. It will answer the irritating complaints of a certain class of consumer, who cannot discriminate between the value of service added to the price of a commodity.

The Canada Food Board has done wonderful work in the matter of education, and I think it would be agreed that its chairman, Mr. Thomson, has devoted a good deal of time and energy towards having the public to realize that a good substantial and economic substitute for meat is fish.

The war has created and will still develop in future new conditions, both in politics and economics.

The question of providing food for allied countries which are no longer producers of foodstuffs, or, at least with their capacity of producing limited to a minimum, is a considerable one—just as important, in my opinion, as the one of armaments, of munitions, of soldiers. Food saving, food control and food distribution, will win this war.

The present chairman of the Canada Food Board has the situation clearly understood. He has faith in the saving of foods, and his recommendations and advices are always the result of sound and deep thinking on the subject. Take, for instance, the Canadian Food Bulletin. Each edition has a mine of information, of hints, which teaches the lesson of how to live well under present conditions without stinting oneself. How a little individual sacrifice will do so much collectively for the war.

The last publication — "Fish and How to Cook it" is a perfect exponent of its subject, and after reading it the consumer cannot but fail to be convinced that by using fish he is helping the cause of the war and himself at the same time.

In the month of November last, Mr. J. J. Harpell and the chairman of your committee were called before the Board of Trade of the city of Montreal, and at a session of the Executive addressed the meeting, asking the co-operation and influence of the Board towards developing and improving the fish industry of this country. A little later the chairman of this committee also spoke before the Chambre de Commerce on the same subject. In both cases, it is right to expect that valuable assistance will come from both of these powerful institutions, in due time.

I am pleased to mention that Mr. T. W. C. Binns, of

Ottawa, who is on the panel of the Publicity Committee that has contributed articles in the papers of his city. He has also with a great willingness assisted the Canada Food Board, in the matter of general information, conducting experiences, making observations, etc., for the benefit of the Association—and the fish industry generally. Miss Doris Hemming, who is a member of the Committee, has also, in the columns of the "Star" under the heading of S.O.S.O.S. published quite a number of well written articles, where fish came often and quite naturally under her well-trained pen. I wish to add a word of praise and thanks to the "Canadian Grocer" and the "Prix Courant," for the interest they have taken in the fish cause, by publishing—the first named in the English language, the other in French—many interesting items for which they deserve the congratulations and thanks of the Association. I want to lay stress once more upon the importance of publicity and education with our Association. Our work is in most cases a direct appeal to the consumer, and it is only by increasing consumption of fish that we can develop and improve this neglected resource of ours.

Already our endeavors have had their reward. There has been a substantial increase in the consumption of fish of late—as a proof, our statistics establish that in our last fiscal year there was an increase of 40 per cent of fish marketed over the previous tabulations of the department. We should in future develop the propaganda or teach the gospel of "Eat more fish," especially with our rural districts.

Why not make an effort to impress the minds of our rural friends, and convince them that an ideal summer food is salted codfish, mackerel, sea trout, herrings, turbot, salmon? Salted, pickled and dried fish is the principal article of food for people living in tropical regions. During the summer months a diet on salt and pickled fish is not only healthier, but more economical, and there would be a double profit to our consumers of the rural districts, if they would adopt it; besides the encouragement and impulsion given to our fish industry.

I want, before closing this report to give a note of warning to some of our Press, which in the past has sown the seed of discord and caused friction between consumers and the trade. Last spring a certain quantity of fish had been sent to the incinerator in Montreal, but no more than usual; still, this event caused some dailies to publish quite sensational reports, contrary to the facts, and put in such a form before the public as to convey the impression that all tradesmen, and particularly fish tradesmen, were dishonest, dishonest and deceitful, not to say any more. I think it the duty of the Publicity Committee to protest strongly against such statements, which are antagonizing one group of the community against another, without any real cause, and thereby encroaching upon the privileges of the tradesmen without improving the situation of the consuming classes.

I beg to convey my heartiest thanks to the other members of the Publicity Committee, who have assisted me so ably and so generously in the preparation of this report.

J. A. PAULHUS,

Chairman.

August 6, 1918.

Mr. J. A. PAULHUS:—The Publicity Committee, whose report I have just read, is a very important branch of the Association. I will go so far as to say that it is perhaps the most important committee in the Association, because we appeal directly to the consumers, and it is the consumption of fish that will develop the industry. If we can develop a large consumption of fish the industry will increase, and I am sure that all the other matters in relation to the business will settle themselves.

I would like to make a plea for strong and able men in this Committee. I think we must have in our Association a great many good men. I have been chairman now for two years; I have done all that I could in the place which I have had the honour to fill, but I believe that a change is often a good thing in a matter of the kind; the human brain is a good deal like an electric battery, you have got to charge it over again, and in a case like this the only way to charge it, I believe, is to get a new head and new brains to refresh our worn-out ideas. I have done my best for you as chairman of the Publicity Committee, and if you now see fit to elect another chairman you can depend upon me to do all in my power to assist the Publicity Committee in making the fish business just as prosperous as it is possible to make it.

CHAIRMAN WILSON: There is not much of a contentious nature in this report of the chairman of the Publicity Committee, gentlemen, but I think that those who are prominently interested in this end of the matter ought to feel very grateful to Mr. Paulhus for the work which his Committee has accomplished during the past term. I was rather disappointed to hear his last remarks; they sounded rather as if he were trying to pave the way to side-step the duties of his position as chairman. I may say that he has served in this capacity for the last two terms and his work has been most efficiently performed. I am sure that the industry has gained very materially by the able work accomplished by Mr. Paulhus and the other members of his committee.

Perhaps there are some suggestions that can be offered that might prove helpful to the incoming committee. It is an important part of the work, almost as important as transportation — Mr. Paulhus thinks probably it is more important—and I am sure that it is certainly one of the things that have got to be put in line with other important matters, such as transportation and production. I would like to have from any member, but more particularly from those interested in the production of fish, some suggestions that might be helpful to the incoming Publicity Committee.

Mr. T. W. C. BINNS (of Ottawa): There are really two sections of the Canadian Fisheries Association, the producers and the distributors. Speaking now as a distributor, we look to the producers to provide the goods and they look to us to get rid of them, and it seems to me that the work of the Publicity Committee is a work of propaganda that should be carried on practically every day in the year. There are two suggestions I should like to make for the benefit of the incoming committee. Due, of course, to the way in which the members of the Association are separated across the continent, it is impossible for any one man to see all that is being printed in the newspapers about the industry. There are many, however, who notice from day to day items of interest in the papers, and

if they would cut them out, marking them and sending them to the Chairman of this Committee, he might be able in the course of a year to provide us with some very good reading matter, selecting certain items of vital interest. I would also like to suggest that the chairman of the incoming committee be requested to gather up a series of advertisements, either posters or newspaper advertisements, which could be displayed on occasion so that those of us interested in advertising might be able—as Mr. Paulhus has expressed it—to refresh our worn-out ideas. I should like to tell Mr. Paulhus now while I have the opportunity, how much I have always looked forward to reading his reports, and I am sure that I have always received a great deal of benefit from them.

LOBSTER PROPAGATION.

Dr. A. P. KNIGHT, of the Biological Board of Canada read a paper upon lobster propagation.

Mr. Chairman and Gentlemen,—In accordance with the programme which was laid out for the proceedings of the Convention, I had expected to be asked to give my paper at to-night's session, and I have only had about five minutes' notice that my time has been changed to the present hour. I had intended to have a couple of lobsters here, male and female, to show the parts of the lobsters and how development takes place, the way the sperm or milt comes out, how copulation takes place, and how the eggs are laid. I shall not be able to show you that to-day, as I have not been able to get any lobsters in Halifax. I thought that I could at least easily get boiled lobsters or lobsters from the cold storage plants, which would have served my purpose, but I find they are not to be had, and that not being possible, I shall have to omit that part of my address.

I had especially in mind those of you who are actual fishermen, but it not being possible to give what I had intended, I am obliged to change my address, and talk to you about one method of lobster propagation that I find is not popular by any means amongst the fishermen. I mean the production of eggs, increased egg production. Those of you who have had a classical education will remember that the celebrated orator Cicero was at one time asked by a student of his what the most essential things in oratory were. What was the first essential? Cicero replied, "Action." What was the second essential? He again replied "Action." What was the third essential? he was asked, and once more the answer was, "Action." Now, if you ask me what the essentials are for the conservation of the lobster industry, I might say that the first thing to aim is the production of eggs—if you cannot produce more eggs, at any rate take care of all the eggs that are produced. What is the second essential? Eggs. The third? Eggs, and still more eggs, for if you do not take care of your eggs you will very soon find that you are not able to keep the lobster industry alive.

Now, I said a moment ago that I did not find my recommendation to fishermen to endeavor to increase egg production very popular. I did not expect to find it popular. Conservation is not a popular thing at all, it is very unpopular amongst the fishermen, because when you talk of conservation he knows that you and he does not like that; he wants to catch every mortal thing in the shape of a lobster down to five inches,

at least that is what they tell me. They want no limit less than the five-inch limit, they want to keep all lobsters from five inches upwards, and are quite willing to throw away any lobsters under five inches. It is a preposterous idea of course, but at the same time that is the proposition along most of the coast.

The question is, can we make existing lobsters produce more eggs than they do? My answer to that question is this:

Four years ago I had forty-five female lobsters and about seventeen male lobsters put into Long Beach Pond in a pen made of latticed material such as you often use for building a fence. The pen was twenty



DR. A. P. KNIGHT,
Member Biological Board of Canada.

feet long and ten feet wide and the slats were about four feet high. I had two pens, one adjoining the other. Then I put in these forty-five females and seventeen males at the end of June, just at the very end of the fishing season. I left them there, feeding them twice a week regularly and oftener if the food disappeared, until the end of August. On the 29th of August I had every one of them dipped up. I examined every lobster and to my utter amazement I found that thirty out of the forty-five females had eggs on them. I assure you I was never more amazed in my

life. Why? There should not be much amazement about animals mating, you would say, and yet this is why. In St. Mary's Bay just immediately adjoining one end of the pond and in the Bay of Fundy, about a mile or so away from the other end, from all I could gather from the lobster fishermen there they never found in their fishing at any time of the year—and their fishing season begins on the fifteenth of November—more than about one female out of every hundred that had eggs on it. Yet in this little pen, where I brought the male and female together there were thirty out of forty-five, and—moreover—the ones that had eggs on were all big lobsters, the balance of them being the small or medium-sized lobsters, ten inches and ten and a half inches. You can explain that in any way you like, but these are the facts.

Now I have a theory about it, of course, but you know we fellows are often twitted with being terribly theoretical. Let me say here, in passing, however, that the man that has more theory about him than any other man I ever met in my life is the fisherman, and in illustration of this I might tell you a little story. I went out one year with the cod fishing people. I was after an experiment, and though I got beastly sick every day. I stuck to it, and went out day after day at two, three and four o'clock in the morning. One day, when there was a little sea on, one of the fishermen was not catching as many cod as he thought he ought to get, and this is what I learned from him when I asked him what he thought the matter was. "I guess they must be seasick." That was his theory, "Oh," he said, "the waves are stirring them up," and and if you can beat that by any other theory you can advance, I will not tell that story again. I think that is a pretty good illustration of every fisherman that I have ever met, and yet they want to tell you that we scientists are the theoretical people, and that they are the practical people. Now, I would like you to theorize just as much as you like about this, and I will give you the facts next year.

The next season we tried the same experiment, but we had fifty-one females and only one male, and that year we got forty per cent, that is forty females out of every hundred had eggs on them. There was just this difference between the eggs the first year and the eggs the second year. The first year's eggs all went on and developed, became fry and hatched out, but of the forty females of the second year's experiment, only two or three had fertilized eggs, the rest all went bad—you can understand that easily enough. (Laughter.)

The third year's experiment was similar, except that we carried the experiments on at three pens, Long Beach Pond was one, Pictou was another place—I had charge of that myself—and the third was in St. Andrew's Bay, where we have the station. We had these three different pens along the coast, and the average of the percentages at these places was forty-two out of every hundred—and you can explain that in any way you like.

QUESTION: What proportion of males and females was there the third year?

Dr. KNIGHT: Roughly speaking they were equal, just a few more females perhaps.

QUESTION: And all the eggs were fertilized?

Dr. KNIGHT: Every one of them.

The last year, that is the fourth year, with the approval of the Biological Board of Canada, under

whose jurisdiction I work and of which I am a member myself, I carried on experiments on a very much larger scale than during the first three years. We bought one thousand males and one thousand females, and I put them into the muddiest part of Long Beach Pond, not into these compartments which we had used before, but right out in the central part of the pond, where it is exceedingly muddy and where there is sulphurated hydrogen gas coming to the surface all the time—so that if you but touch the top with a stick you can smell the gas all over an area as large as this room. There is no question about the gas, and there is no question about the mud. I had it analysed by Doctors McGill and Goodwin (both of them chemists well known throughout Canada) and it was just stinking, slimy mud. Now from this pen I, of course, did not expect we were going to have as large a percentage as in the other three years, because you can see the disagreeable conditions under which we were working, but I got three hundred and thirty-three per cent more berried females in that muddy bottom last year than the fishermen could get either in Mary's Bay at the one end or in the Bay of Fundy at the other. There are your facts, and you can theorize as much as you like. I am here to-day to give you facts, and although, as I said before, I admit I have my own theory about it; I am not going to give it to you, for a man does not care to be twitted too much about these matters.

QUESTION: Do you say the best breeding place was in the stinking water and the mud?

Dr. KNIGHT: Yes, and it was exceedingly muddy.

QUESTION: We couldn't tell the consumer that.

Dr. KNIGHT: Oh well, we liberated them all afterwards into St. Mary's Bay.

QUESTION: What was the difference, how much better was the last experiment?

ANSWER: Three hundred and thirty-three per cent over what you would find in the fishermen's traps in either of these two bits of salt water.

I have been pressing these facts on the lobster fishermen this summer, and how were they received, do you suppose? In dead silence. They don't want to make lobsters; they want the Government to breed lobsters and to produce eggs, and to grow the fry up into adults so that they can catch them.

QUESTION: Why shouldn't they? Is not the lobster industry one of our natural resources? I think it is the duty of the government to protect all our natural resources.

Dr. KNIGHT: Precisely, and I admit the Government should do all they can to protect them; but speaking now as a citizen of Canada and not merely as a scientific man, I say that I do not care what the natural resource is, whether it is lobsters or fish or lumber in our woods, every one of our natural resources should be taxed in order to support and maintain all the resources of Canada—it should not come on the general citizens of Canada to have to pay for it altogether. It is not justice to expect the people to spend their money on a natural resource which is being depleted all the time by the fishermen for their own personal benefit. I may, of course, be all wrong, but that is what I think about it. Why the fishermen look upon this matter in this light I do not know; but if I have a theory, why, the fishermen regard with open hostility any suggestion to co-operate with the Government in its efforts to replenish the lobster fish-

eries, as I said a moment ago about the propagation, I will keep it to myself to-day.

I say that the protection of the lobster industry and the increase of it—if it can be increased—should be supported by a tax levied and particularly collected in the form of a license fee from the fishermen and the canners also; they ought to have a license fee and be licensed to help pay for the re-stocking of the half-depleted lobster areas. If a fishermen would not obey the law he should have his license taken away from him. We should say to him that if he breaks the law he can't fish for the rest of the year, and if he breaks it the next year he should not be allowed to fish at all. If he is not a decent fisherman he should not be allowed the privilege of fishing.

Part of the tax ought to be borne by the canneries, and let me just say that I find the big canneries are all perfectly willing to be taxed to support this industry, and they are anxious to support the government financially or otherwise in its efforts to revive it. One of the biggest canners told me he was quite willing to pay even 35c a case. It is easy to see what the income would be from that to support the protection service and help pay for the scientific investigation necessary to maintain the lobster fisheries in the condition in which they are now to-day and to prevent them from running down. How did the canners receive the suggestion that they also should contribute to increased egg production? By this I mean that both fishermen and canners should be required to build mating pens along the shores that are naturally protected (it would be useless, of course, to put them on exposed shores where they would get smashed to pieces by any severe storm.) As I said before, not a fisherman said a single syllable about contributing to egg production, but, on the other hand, one of the large canners (I don't mind telling you it was Mr. Baxter) said to me when I spoke to him about this matter—"By the gods, Dr. Knight, you are right, and I will support that to the uttermost." In France and Germany they have laws to this effect with regard to their forests, they are conserving their forests there and have been doing so for many years, and in France and Germany what happens if you cut down a tree? You are required by the law to plant another tree to take its place.

I say then to the lobster fishermen and to the lobster packers—you cannot expect to go on forever taking lobsters out of the sea without beginning now to do at least a small amount of re-seeding. You must begin to plant some seed. You may not like it; none of us like to have work forced upon us. But take the farmer for instance; what has he to do to get his harvest? First, he has to plough and then to sow the seed and then to harrow it in—those are his preliminaries—he plants seed in order to get his harvest, while the fishermen expect the government to keep on replenishing their industry and think all they have to do is to pick the ripe fruit. I say to you lobster men, both fishermen and canners, if you go on as you are doing to-day, the time will most surely come when the industry will die out. If you wish the industry to flourish and survive you must begin to cultivate the lobster in this way, by increasing the egg production.

CHAIRMAN BRITAIN: I am sure we are all very much indebted to Dr. Knight for coming here to give us such an able address on the propagation of the lobster. It is a question which is much before the fishing

interests at the present time and Dr. Knight, making as he is such a deep study of his subject, is in a position to give us the valuable scientific information that is necessary if the lobster is to remain as part of our fishing industry. I think perhaps it might be well to have some discussion on this address which has just been given to us by Dr. Knight. We have men here with us to-day who are directly interested in the lobster industry and who will perhaps be able to give us an expression of opinion on what we have heard from Dr. Knight or along a different line.

MR. H. B. SHORT (of Digby, N.S.): I was very much impressed with what Dr. Knight said as to the production of eggs in the pond with the muddy bottom. With such splendid results being obtained it seems strange that the government should pass a regulation condemning all these ponds. If thirty lobsters out of forty-five produced fertile eggs in the pen and if in the muddy pond you can produce three hundred and thirty-three per cent of eggs, why do they say that they will do away with all these ponds and let the lobster breed under natural conditions? If you can produce such results in a muddy pond it seems to me it would be a great mistake to do away with these experiments.

DR. KNIGHT: The answer to that is simple enough. No man would want to keep up that breeding in the mud pond. I certainly would not want to. Although the pond has served a very useful purpose it has cost a lot of money, but I do not know of any experiment in science that has not cost money, and a great deal more money than Long Beach Pond. I think it was a cheap experiment, but I do not by any means advocate continuing there; we could do far better elsewhere. I tried that experiment in the middle of the pond, under the worst conditions possible for the purpose of giving the mating egg production experiment the severest test I knew of.

MR. SHORT: The idea of mating these lobsters in the pens certainly has proved to be a very valuable experiment, you have proved that you can produce seventy-five per cent of fertile eggs in that manner. If this is so, why is a recommendation handed in to the committee to do away with the production of them in this way at all?

DR. KNIGHT: No, on the contrary I am recommending it, both in my report of last year and in the address which I am making to-morrow. I am recommending strongly that these should be continued, but only in suitable places.

MR. W. S. LOGGIE (of Chatham, N.B.): I think the recommendation is to discontinue the hatcheries rather than the ponds that Dr. Knight has reference to.

DR. KNIGHT: The hatcheries all around the coast.

MR. LOGGIE: I would like to know how the enclosure was made, what the protection was to keep the lobsters from getting out and whether it is very expensive. If what Dr. Knight states is practical in harbors I should think it would be a very good plan to adopt it; it certainly ought not to be very expensive if suitable places were found. I know, however, that the location of most of our canneries on the sea coast would not make the experiment very practical there, there would be such risk of sea damage; the storms would damage any material which you might place around the lobsters to keep them from getting away. I would like to know what protection there would be to keep the lobsters from getting out of the enclosure.

DR. KNIGHT: The answer to that is that Long Beach

Pond is a pond with one side on St. Mary's Bay for one barrier. This is made up of a sea wall of large stones and smaller boulders and gravel, and as the tide rises out in St. Mary's Bay the water soaks through this sea wall so that once the animals are in the pond the big wall prevents them from getting out.

Mr. HUGHES (Prince Edward Island): I did not quite catch Mr. Loggie's remarks and Dr. Knight did not make is quite clear. In one case he mentioned the actual number of lobsters that bore eggs and in the other he spoke of percentages, and I could not gather a clear understanding. In a word, what I mean is this: Does he say that a muddy bottom and stinking water are better for the propagation of lobsters?

Dr. KNIGHT: That was the severest test that I could have given to this experiment on egg production. If the animals increased in that shallow, muddy water they will increase much more rapidly anywhere else in better conditions.

Mr. H. B. SHORT: Have you any theory as to the condition these lobsters would be in when they matured, after being bred under such filthy conditions?

Dr. KNIGHT: Well we have had no time; our first experiment was only four years ago and it takes from four to five years to grow an eight-inch or ten-inch lobster.

Mr. SHORT: Have you any idea what their condition would be? That is, would it be an eatable thing, just as good as a lobster bred under sanitary conditions?

Dr. KNIGHT: Oh come now, I cannot answer that.

Mr. SHORT: Well then, I think you are a theorist. (Laughter.)

Dr. KNIGHT: We have been experimenting in this connection for some three years now, but it will be at least three years before I could tell you what the full-grown lobster bred under these conditions will be like. It will be at least two or three years before any of them will be ready, will be large enough for food.

CHAIRMAN BRITAIN: If none of the other members have anything to say in connection with this matter I think we must pass on to our next subject as there is still a lot of work to be done here. We have a paper kindly prepared by Mr. T. W. C. Binns, entitled, "Standards in Marketing." I see we have Mr. Binns here to-day and as I do not want to let him get away from us I am going to ask him to give us his paper now.

"STANDARDS IN MARKETING."

By T. W. C. BINNS.

"Mr. President, and Members of the Canadian Fisheries Association."

Mr. Harpell, your acting secretary and director, has requested me to offer a few thoughts for your consideration, and has furnished me with a title "The Standardization and Marketing of Fish."

While I feel at times, like many other Canadians, opposed to "titles", I hope I may bring out for discussion a few ideas which have come to my attention as a retailer of Fish. It may be only a co-incidence, but the two other papers which are being discussed at this session, under the heading of "Marketing of Fish", have been prepared, one by an out-and-out producer. Mr. Brittain, and the other by Mr. Byrne, who until comparatively recently was considered more as a

wholesale distributor. My remarks will be entirely from the retailers standpoint, and it may be well just at this time to remind you that the retailer comes in closer contact with the consumer than any other section of the Fishing Industry.

Consequently the retailer hears all the complaints and is, in the final analysis, the party who should receive reasonable consideration from the producer.

"The Standardization and Marketing of Fish."

A standard is defined as "a medium or weight by which others are to be regulated and adjusted. Serving as a standard — capable of satisfying certain conditions fixed by competent authority — Fixed— Settled."

As a body of men, both wholesalers and retailers who are anxious, as never before, to put the Fish Industry in its proper place, we should at this Convention, frankly and fairly discuss and smooth out points of difference, so that when we shall return to our respective business we may be in a position to devote our fullest energy to the encouragement of a still greater consumption of Fish as a necessary food. The time has gone by when the retailer could ask "any old price" and still be sure of making a handsome profit. But with a responsibility to the great consuming public ever in mind, it is most important at the present time, as never before, to know just what to expect when placing orders.

It might be well to again remind you that my observations are entirely from the retailers viewpoint, and as the retailer, as previously stated, is the man who comes in close contact with the ultimate consumer, I take it, that these views are worthy of careful consideration.

While at the present time considerable of our Canadian Fish is shipped abroad, producers should in their own interests cater to the domestic market. What is a retail dealer to expect when he orders a barrel of Tom Cods? This question has already been asked the Department of Marine and Fisheries, but to quote their reply "as the Department has not been asked to stipulate any standard weight, no standard has been fixed." As we are evidently to make our requests known, possibly we may now make some recommendation to the Department as to what a barrel of Tom Cods should contain.

When a fruit dealer purchases a barrel of apples, he knows just what quantity he will receive, but Fish dealers have been so apathetic, that to put it mildly, we have taken anything the producers have felt inclined to give us, and generally speaking we have said nothing; and we are to infer that until somebody asks the Department, no standard will be fixed. Let us get busy and say something right now. Why should a barrel of Tom Cods at times weigh 100 pounds and on some occasions only 60 pounds?

These are actual figures taken from experience last Winter. For many years practically all retail dealers have been asleep and my suggested remedy is that every retail Fish dealer should make a practise of weighing the goods he receives, and, if I am not greatly mistaken he will be surprised to find what he has been paying for and not receiving.

Have any of you, who are retailers, ever figured out, how much snow is shipped with your Tom Cods and other Frozen Fish, on which you have had, either directly or indirectly to pay freight charges, which are now considerably higher than some years ago?

Do you, who are retailers, make it a practise to

weigh your boxes of Finnan Haddies and Fillets? If you have not done so, start right in this Fall and take notice.

The consumer must be protected at all costs and the retailer goes to considerable expense in equipping his Store with the most modern weighing machines, so that the consumer may get what he is paying for, but what of the retailer, who often receives 270 and even 260 pounds for a 300 pound box of Haddock or Cod.

I realize that I am treading on dangerous ground, but why should a retailer receive 260 pounds of Fish and be compelled to pay for a full 300 pounds, also to pay Express charges on 300 pounds; again I say, "Retailers, weigh your Fish every time."

Apparently retailers have not yet realized their importance in the claim of distributors.

On several occasions the "Canadian Fisherman" has been very emphatic in its determination that Packers of Canadian Fish, for example, should mark their products with the actual weight, that half a pound can of Lobsters, for instance should contain 8 and not 7 ounces of meat.

The Canadian Food Board regulations have also been made to protect the consumers, yet the retailer of Fish has allowed the producers to suit their convenience only.

This contention is also borne out by the repeated complaints of receivers of Canadian Fish in England, as reported from time to time.

As another of poor marketing conditions and which might be greatly improved upon, I will refer to the manner in which Flounders and Atlantic Flat Fish are shipped as compared with the Pacific product. While Pacific Flat Fish is shipped nicely headed and gutted, the Atlantic Fish is usually shipped just as taken, with the gutt in, simply dumped into a barrel, just another case of careless indifference.

What is the Standard for Smelts, Extras, No. 1's and No. 2's? At present apparently there is none, and again the retailer is at the mercy of the producer. To give an instance which brought this forcibly to my attention:—

Last Winter I purchased a shipment of Extra Smelts from New Brunswick necessarily without seeing the Smelts beforehand. On arrival at Ottawa the Smelts sold freely, and in consequence another shipment was bought from the same producer, but in the meantime the price had advanced very materially. I felt justified in expecting the Smelts to average out about the same size, but on arrival, the so-called "Extras" were no larger than the No. 1's of the previous shipment. In consequence customers who had purchased from the first shipment were very wrathful when they were later charged a higher price for smaller Fish. Evidently "Standardization is necessary."

Without wishing to take up too much of your time, I would ask yet one more question:— When Haddock is scarce and prices high, so that producers at times quote Haddock at a price and "Small" Haddock at a shade lower, who is responsible for the grading? What weight should a retailer expect to receive when he orders "Haddock" and "Small Haddocks"?

I thank you for the close attention you have given me, and look forward to a free discussion on the points raised.

CHAIRMAN BRITAIN: We are very much indebted to Mr. Binns for bringing up some very live questions and you gentlemen perhaps will join in giving us some valuable information along these lines. When

Mr. Binns referred to buying tommy cods in barrels, which when received weighed as low as sixty lbs, I presume that in that particular case he bought the tommy cods by the weight, that he bought a barrel of tommy cods and paid for what he had purchased with the natural shrinkage taken into consideration. In the case of a barrel of apples of course the apples are bought by the barrel and not by weight or measure. In regard to this whole question of shrinkage I am sure that co-operation will develop some sort of standardization which will help in bringing us all closer together. It is a very difficult question for the purchaser to overcome after the fish leaves his premises, and he also has his shrinkage to take care of before the goods leave his warehouse; they then start on their journey to the consumer and there is further shrinkage in transit. There is the same problem in the meat business, they have shrinkage in their hams and in their bacons. But when they take an order for a basket of hams they mention distinctly that the order is taken for a "basket of hams supposed to weigh fifteen pounds," but they admit that it will shrink in transit. The difficulty perhaps could be overcome by the retail distributor adding enough to his costs to take care of the shrinkage.

Mr. N. S. CORNELL (of Port Stanley): On the Lakes we take care of the shrinkage while the goods are in our possession. We pack our fish in 100-lb. packages. The packages are carefully weighed while being packed and we do not weigh ice or snow but we weigh fish, and in every 100-lb. package we put in 105 lbs. of fish, and still we sometimes get complaints from the men that handle the fish that there is sometimes a shortage. We have had several investigations in an endeavor to find out where that shortage would occur, and in most cases we have found that the fish has been stolen in transit by the agents of the express companies; in going from the station to the retail dealer again they sometimes break upon a box and take home some fish for their families and friends.

Mr. J. T. O'CONNOR (of Montreal): I may say that I have spent practically a lifetime in the trade and there has always been this controversy over shrinkage. We have always had trouble and have endeavored to get together to devise some means whereby we could get the weight. I think, however, that this long discussion could be wound up very easily if the Atlantic people would adopt the practice in vogue on the Lakes and on the Pacific Coast. The Lake people and the Pacific people turn out good weight and our firm has no complaint with either. There may be occasionally some slight difference, but nothing beyond what is natural and allowable. The Eastern people never seem to be inclined to be generous in weight or to allow for shrinkage, while the Lake man puts in overweight allowance for shrinkage. I think if the Atlantic people showed the same generosity they would find little complaint coming from the trade.

Mr. LOGGIE: I certainly was much interested in Mr. Binns' remarks. I followed him carefully, but he did not make his case as clear to me as I would like it made. He admitted there was shrinkage, and yet in view of that fact if he bought 100 pounds of fish, f.o.b. Halifax, and there was shrinkage he would expect to pay for less than he bought, that is, if it weighed out only 95 pounds in Ottawa he would only want to pay for 95 pounds. I think there is a matter of principle there: If I buy so many pounds of fish, f.o.b.,

a certain station and there really was that many pounds in the box when shipped it seems to me it is up to me, at the other end, to bear the shrinkage, and yet Mr. Binns' contention as a retailer is that he should have to pay for only the 95 pounds which the box contained when it reached its destination. I do not suppose it is much good to discuss it, but as a matter of principle it strikes me that when goods are bought f.o.b. a certain point the buyer should stand the risk of shrinkage. I think Mr. Binns will acknowledge that that is a business proposition recognized in all commercial life. If he bought the goods delivered Ottawa then I could understand his claim, but as I need not tell Mr. Binns the shipper has done his duty when he gets a clean bill of lading from the transportation company and it is then up to the carrier and the consignee to adjust any differences in weights. If the goods were bought at a delivered price I would perhaps find no fault with the contention that the shrinkage should be borne by the shipper rather than by the receiver. I think that this point that Mr. Binns has brought out is really worthy of consideration. He mentioned the fact that a can of lobsters contained only 7 ounces weight. I need not tell him that the wisdom of Canada has passed judgment upon that, the parliament of Canada has deliberated upon the subject and is willing to accept only 7 ounces of meat for a half-pound can of lobsters, provided you mark it plainly on the label. Not only does the Canadian parliament allow this, but if you go just across the line you will find our American neighbors doing the very same thing; whatever the can contains of net weight the label must set forth. I know that is the idea of the Canadian Government in passing this regulation which will come into force in the very near future. Seven ounces is a legal weight for a half-pound can of lobsters, provided it is so stated on the label. (Applause.)

Mr. BINNS: I have listened closely to Mr. Loggie's argument. The retailers have no objection to getting tommy cods in fifty-pound lots so long as we have the packages marked fifty-pounds and containing fifty pounds. If these tommy cods were sold by weight it would be a better proposition for the retailer. Our contention is that we must know what we are getting and what we are paying for, so as to know how to adjust our charges.

Mr. LOGGIE: I have a conviction in my mind that the case Mr. Binns refers to is a very exceptional one. Our tommy cod barrels are always packed full and they weigh about 100 pounds, they contain about 100 pounds when they leave us.

QUESTION: Are they sold by weight?

Mr. LOGGIE: No, by the barrel. However, they contain about 100 pounds when they leave us. My experience is that this same barrel that is full when it leaves the shipping point often may be down to three-quarters when it arrives at its destination, sometimes perhaps because of mild weather. Of course, when the retailer opens a barrel and finds it only three-quarters full he is dissatisfied; but it is something you cannot overcome—the weight was there all the same. If anybody sends out a barrel with only sixty pounds in it of course they have no right to be paid for one hundred pounds, and if Mr. Binns receives any sixty-pound barrel he is a very foolish man to accept them. A barrel of tommy cods should contain about 100 pounds or thereabouts, a little over sometimes and then again a little under perhaps.

Mr. BINNS: Gentlemen, I am a peaceful man, but when I get a letter like this from a man I confess it upsets me:

Chatham, N.B., Feb. 27th.

Matthews-Blackwell, Ltd.

Gentlemen:

... We regret very much that same should be apparently poorer than the previous lot and are unable to understand the matter, since our Extra Smelts are as far as we are aware the same quality as shipped you before.

Regarding the weight of the tomcods you speak about, we think this must be an exception, since our foreman at the shed is very particular with reference to his fish and we have had no other complaints with reference to snow this season ... Trusting that you will have no further cause for dissatisfaction with these tomcods.

Yours truly,

W. S. LOGGIE COMPANY.

Mr. LOGGIE: As I understand from that there was snow in the barrel. It could not have been properly emptied out. Possibly our men may have been a little bit careless. All I can say is that it is our practice to empty out all our tommy cod barrels thoroughly before they are refilled and then all that the barrel will contain is put into it, the fish are packed down as tight as possible. Perhaps a shortage in the winter season might be accounted for by the fact of the fish being frozen, when it is much more difficult to pack them solid. This one instance, however, does not affect the situation or the principle in doing business.

Mr. BOWMAN (of Port Arthur): I once got an order from a man to fill eight hundred kegs of herring. At the time I took the order I did not realize how much emphasis he was going to place on the word "fill." Although he supplied the packages himself, the matter ended in a lawsuit in which I fortunately came out on top. But he supplied the packages and claimed afterwards that there should be a large over-run, and indeed his idea of an over-run was that there should be twenty-five pounds allowed.

We men from the Lakes are rather surprised at the lack of generosity apparent sometimes in the shippers from the Atlantic sea board. As Mr. Cornell has pointed out with us it is always understood that 100 pounds of fish shipped from a lake point contains five pounds extra to allow for shrinkage and to ensure that the purchaser at the other end gets his 100 pounds of fish. I think that Mr. Binns has brought up in his paper some very important questions. The retailers are the men who handle the fish and have to take the final losses, and even the distributors, wholesale and retail, should, I think, be entitled to some lee-way in the way of allowance for shrinkage. I am of the opinion that it is up to whatever committee of the association has that task in hand to see that a proper understanding exists.

I was surprised at our friend Mr. Brittain when speaking from the chair seeming to indicate that a barrel shrinking down to 62 pounds was quite in keeping with the conditions under which the tommy cod was shipped. If we shipped 100 pound packages from a certain point to Montreal and found that when they got to Montreal they only contained 62 pounds we should investigate thoroughly, and it sometimes turned

out as Mr. Cornell has pointed out that these leakages occur after the goods leave the hands of the shipper. At one time I had considerable trouble with an agent who was handling fish merely as a side-line and was not very careful about the way he handled it, so that there are dangers all along the line to the man who buys fish.

Mr. CORNELL: I may further say that in Port Stanley we have a surplus sometimes. Each individual producer is credited up with the number of boxes put into the freezer. Those fish are weighed in by the cold storage company, and on one occasion there was a surplus of from three to seven per cent, or about what the fisherman had shipped them out at, and that had to be divided up pro rata to the shippers, credited up to them. So that it depends a great deal on the distance that you are shipping your fish and also on the conditions under which they come in. Fish standing right in your warehouses are what we called slimed and we allow five pounds on each box to take care of what we call the sliming. Now if they only come a very short distance the receiver will have more than this 100 pounds, but he never gets less. (Applause.)

Mr. SHORT: Mr. Chairman, I was very much interested in Mr. Binns' paper. Most of us were aware that it was going to create a certain amount of discussion, but according to some of the remarks you have heard here just now the public might be led to believe that the producers on the Atlantic end were not giving as good weights to their customers as the producers on the Pacific end. Everybody is aware of this shrinkage in fish all the way along the line. You can weigh 100 pounds of Atlantic fish to-day and then put it on ice and weigh it to-morrow and find you only have 95 pounds. Everybody realizes that. But I am sure that when that fish is shipped to the consignee he gets his 100 pounds every time, because I am quite familiar with the majority of the producers on the Atlantic coast and I know that all of them are thoroughly honest fellows.

(Voice): Honest, but not generous. (Laughter.)

These gentlemen forget that the majority of the fish that come from the Pacific coast are frozen fish, and frozen fish will not shrink, the shrinkage is taken out in the freezing, so that they do not shrink as the fresh fish do at all. Why the producer on the Atlantic end should be expected to give the retailer 105 pounds I cannot understand. We can't get 105 pounds from the fishermen; he is very, very particular in his weight and the minute that scale moves up he stops it. We are the ones who get the poorest weight, we do not get nearly as generous a weight from the fishermen as we give to our customers. We see that every barrel of 100-pounds that goes out gets 100 pounds. You seldom get full weight in any commodity, all commodities shrink to a certain extent. Take soap, for instance. When you get a pound package there is never a pound of soap there; but we do not hear anything about that.

Now the retailer must provide for the shrinkage by putting up his price sufficiently. There is a natural shrinkage in fish always. For instance, I know of a case where a party in Montreal got twenty pounds of fish and took it home. But he did not want it that day, and the next day he weighed it out before using it and he was much surprised to find out that it only weighed nineteen and a quarter. So he went back to the dealer, and of course the dealer said, "Oh, well, there, that

is the shrinkage." But the retail men do not provide for that sort of thing, and the only way to settle the difficulty about this natural shrinkage in fish is for the retailers to put up their price enough to provide for it.

Mr. O'CONNOR: I should like to follow Mr. Short's argument up, it is an appeal to both Mr. Binns and myself. Follow a carload of your fish from Digby right up to Montreal. There we divide it up. There is thirty pounds short, the shipper is not willing to lose it. Who is going to lose it? We are the ones who lose the whole thirty pounds, but I cannot see why the original shipper should not take a part of that loss.

Mr. SHORT: Because he is not making a profit on it.

Mr. O'CONNOR: Well then there is nothing for it but for us to take our medicine and pay the difference. We cannot put it up to the customer, he would be quite sure that our scales were wrong.

Mr. LOGGIE: Well, about the weight of the tommy cod barrels, as far as I am concerned, I should be glad to have some arrangement for a standard weight. Perhaps we could sell the 100-lb. barrels by weight, by the 100-pounds weight when packed. At the same time it must not be forgotten that when a thaw came there would be a shrinkage.

Mr. BINNS: Your doctrine of co-operation has been preached for a couple of years. We have to-day with us men from the Atlantic and men from the Pacific and men from the Great Lakes. We have been told that the weights we get from the Pacific are usually good, and I have in my hands two orders sent by American shippers where it is plainly stated that they allow five pounds for shrinkage in transit; there is evidently some lee-way given by them. But our friends from the Atlantic coast do not seem to be inclined to be generous. We were told yesterday that the small man must be helped along. So far as my firm is concerned, we are using Pacific fish and lake fish and Atlantic fish, although we are using more lake fish, I think, at the present time. Now if the Atlantic people will not be generous to us we are going to take the line of least resistance, buy our goods where we are going to make the most money,—we are going to buy lake fish. We leave it to you, gentlemen; if you won't come down we can do without Atlantic fish. We are educating the people of Ontario to eat lake fish and they are eating lake fish to a larger extent every month; there are many even here in this room now who have taken quite a liking to fish from the lakes just in the last few months, and the Atlantic people are going to suffer if they are not generous to the people of Ontario. I am going to stand by my attitude to-day, gentlemen, throughout this Convention, and if you will not agree with me now, why at the next Convention I will be back to fight you again. (Applause.)

Mr. E. LAPOINTE: (Ottawa): We do not mind five pounds shortage, but when it comes to ten, fifteen or one hundred pounds, I think it is a little too much. I have often told Mr. Binns that he is a little too generous in his attitude toward the public; he should make his price a little higher to take care of the shrinkage he complains of.

QUESTION: Does Mr. Short make the statement that fish weighing 100 pounds when caught by the fishermen would only weigh 95 when the fishermen got it on his landing stage? When we receive the fish it

is 90 to 95, I think that is the average, so that he gets the 100 pounds from the fisherman, but we do not get 100 pounds from him when we receive it.

Mr. SHORT: We get the 10 pounds from the fishermen, but we do not send it right from the fisherman to you; that fish comes in and goes on ice and we weigh it out the next morning, and if it is only 95 pounds we have got to put in the other 5 pounds, and we do this in every case. When you sell 100 pounds of fish and ship it out to a suburb of Toronto, what do you do about it if the fellow comes back next day and says he has only got 95 pounds? We buy 100 pounds of cod, and as I said before, it is very near weight, but when we ship this out to you we give you your weight every time, and we have lost five pounds over-night.

Mr. D. J. BYRNE: Cod begins to shrink from the time it is taken from the water, and I think I am safe in saying that during the first twenty-four hours there would be a shrinkage of anywhere between seven and ten per cent. The fish coming out of the water is full of water. Now it is so regular a thing that it is almost a rule that fish taken in from the fishermen is not weighed up or shipped within the first twenty-four hours, which is the time the greatest shrinkage takes place. The dealer who buys from the fishermen—I have seen it in many of our branches many times—where the fish are weighed in—they are weighed as they come from his boat, and there is a shrinkage on that fish during the time it is in the producing dealer's hands which he absorbs. If we get an order from an inland dealer, retailer or wholesale distributor, we expect to deliver him at the price agreed upon 100 pounds for 100 pounds charged. Perhaps if the Atlantic dealers had the same profits as the lake fish dealers they could afford to throw in five pounds extra, but we have very keen competition on the Atlantic coast, haddock and cod are cheap fish, sold very frequently at $2\frac{1}{2}$ to 3c a pound.

QUESTION: When does that price prevail?

Mr. D. J. BYRNE: I understand from the wholesale dealers that this is the price for the last ten or, at least, five years.

QUESTION: For haddock and cod?

Mr. D. J. BYRNE: Yes, haddock and cod.

The retail dealers here to-day have spoken about the wholesalers being honest. I am glad to hear that said, because there is always an insinuation of dishonesty when this question of weight is brought up; but, gentlemen, the wholesaler who is in business to-day must deal honestly, you all know that. Then if we dispose of that there is the other question raised that they are not generous. In my experience in dealing with the retail distributors I have not found them generous on price; they are very keen buyers, I will say that to their credit, and they will place their order where there is a difference of one-quarter of a cent. So that they hold us down to a very small margin of profit.

There has been a contention between Mr. Binns and myself—between our companies—for some time, I just want to lay down my idea of the principle involved; it is not sound business for any man buying goods from me f.o.b. Halifax to ask that I shall put in more weight than he is paying for. If the inland dealer wants to get full weights he can buy his fish from the closest point to him and exact the weight there, but if the dealer at the producing end down here in Nova Scotia

puts in 100 pounds of fish for 100 pounds charged he cannot be asked to do more. To do so, I think, would be an unsound principle of business, because as I said before, this question of profit has been by keen competition cut down to a fine point. If the inland dealer wants to buy his fish and get his pound of flesh—or pound of fish I should have said—he will buy it delivered at his own station: then he can exact the weight, but I claim that if any dealer buying f.o.b. point of shipment gets the 100 pounds put in at that point for 100 pounds charged he cannot claim more.

It is a well known fact in the trade, as has been submitted today, that fresh fish does shrink; haddock and cod and fish like these are subject to a great deal more shrinkage than the closer fish like halibut and salmon; and therefore when we ship 100 pounds (and I have watched it for a period of twenty years) the shrinkage within three days is usually five per cent, although I have known it to be three, and three and a half and up to six per cent, according to season. The fact of hot weather will create a greater shrinkage. This occurs while in transit, and it is our claim as shippers or producers that when we sell a man goods f.o.b. Halifax they belong to him as soon as they are taken out of our hands by the transportation company, and where there is a shortage in weight when the goods reach him—whether that is due to pilferage or to the natural shrinkage which we know exists—it is up to him to stand it. This point of shrinkage is one we must expect. It is a fact which everybody knows, and I do not think the inland retailers would consider for a moment that if they were selling Mrs. Jones or Mrs. Brown a fresh haddock which weighed five and a half or six pounds and which after it reached her some two miles away in the hot weather touched the scales at only five or five and a quarter or five and a half, that they were liable for this half-pound or quarter-pound shrinkage. I think the point for the dealer to remember is that the producer delivers the amount he charges for, and if the goods are bought f.o.b. shipping point the shrinkage must be absorbed by the retailer.

That is the cod and haddock situation, and the prices are based on such a small margin of profit that you cannot expect the wholesale dealer at the point of shipment to put in weight for which he does not charge or to allow for shrinkage for which he is not responsible. It is a very unimportant feature of the fresh fish trade, because it is a trade which only obtains from three to four months of the year, at the outside.

As to tommy cods, these were always such a cheap fish and sold by the dealers at such a low price that it was a question of buying in barrel lots, and in one carload there would be six or seven standard sizes of barrels; and it was always assumed by the dealers that the tremendous profits which the retailer got allowed him to absorb any little question of difference in weight. We understand that the tommy cods are sold more by measure than by weight, and as Mr. Loggie has pointed out, mild weather in transit would cause the fish to fall down so that the consignee only got three-quarters of a barrel. Perhaps the suggestion coming from the retail dealers that these tommy cods be sold by weight is the very best method of handling them. We know that very recently—within the last year in fact—it has been decided in some of our largest American markets that fish which had previously

been sold always by count—like shad and mackerel, for instance—would be sold in future by weight, and I for one think that the standard for the trade throughout Canada in handling all kinds of fish should be by weight instead of count or measure. (Hear, hear.)

Take frozen herring. For many years we sold it invariably by count, so much per hundred, and we always had a bone of contention between the dealers, retails, wholesalers, shippers and producers, as to what the weight per hundred count amounted to. Within the last year, Mr. Chairman, as is well-known in the trade, this method has changed, at least at the distributing points, so that now frozen herring are sold by weight and not by count. I think the same thing should prevail with regard to tommy cods and mackerel and shad and every other kind of fish: instead of selling by count or measure we should sell by weight.

QUESTION: How would you allow for shrinkage if you had to allow for shrinkage? Does the speaker mean that the wholesaler must accede to the demands of the retailer, and that he must grant him an allowance of weight to cover that shrinkage?

MR. BYRNE: That would mean that the wholesalers, to protect themselves, must advance the prices. Now, gentlemen, the margin of profit in handling fresh fish by the wholesalers and producers is usually a question of fractions—it is a matter of fractions of a cent—whereas the profit made by the retailers is very much larger; and for that reason we feel that the retailer should absorb as he has been doing, not the total shrinkage, but his own share of the shrinkage. If I buy something here in Halifax at a price that is agreed upon f.o.b., Halifax, I cannot compel the man from whom I am buying to say that he will undertake to deliver in Montreal in the same condition as the shipment is when it leaves Halifax, I must assume that risk. So must a dealer in Montreal assume the natural shrinkage which occurs in fish in transit from the Atlantic seaboard to the inland city.

As I said before, there is always this question of dishonesty, it is always a mooted point that perhaps there may have been dishonesty. The answer to that is that the dealer inland will not continue to buy his fish from a wholesaler or producer if he is not satisfied that the man is honest. It is very easy for us to determine if the shrinkage is greater than it should be because we have had many years of experience in handling this fish—my company in Montreal has bought fish from producing firms here for the last thirty years, and we always recognize that on all shipments of fresh fish from this section which are from two to four days in transit there will be a shrinkage in the summer time of at least five per cent. It is a recognized feature of the trade and we never claim that shrinkage back from the shipper; I do not believe that the man who buys fish f.o.b. shipping point has any right to claim it.

I am trying to make out, Mr. Chairman, that there is an allowance, although no standard allowance is recognized. There is a usual shrinkage on fresh fish like cod and haddock. There is the question also of buying fresh cod and of buying steak cod. No inland dealer, wholesaler or retailer, will maintain for a moment that the prices of these should be the same, although they are the identically same fish; they are willing to pay considerably more for the steak cod, which has the head and is the larger and selected fish.

But on both there will be shrinkage—that is recognized.

I think the retailer's point has been set forth clearly and strongly, but the other man should be heard from. I venture to say that in other lines of business this fact is recognized and allowed for. The firm in the west ordering a carload of pork or beef products from here or the firm here ordering from the west, at a price f.o.b. shipping point, would certainly expect to take care of such shrinkage as was the regular recognized shrinkage while the goods were in transit.

MR. LOGGIE: I think the point has been well made, and strongly emphasized. When goods are purchased f.o.b. shipping point, it does seem to me that the buyer at the other end should not expect more than was coming to him at the shipping point. Take for instance a box of fresh salmon that you ship from here at a value that you feel they are worth f.o.b. Halifax, and you give 100 lbs. for 100 lbs.; but when they reach their destination perhaps they only weigh 95 lbs., and it does seem to me that this is a shrinkage that somebody at the other end should bear, whether the retailer or the consumer is, of course, another question. But I do not think that it is proper business procedure to expect the shipper, if he sells the goods f.o.b. shipping point, to give more than the weight that he invoices for. (Hear, hear.)

THE CHAIRMAN: Gentlemen, this is a point that certainly should be thrashed out, in the interests of the retailer, wholesaler and producer. My experience has been that all along the line there is shrinkage, and it is no use to talk of stopping it. The producer who takes fish from the fisherman has the greatest shrinkage to bear, because the greatest shrinkage takes place in the first twenty-four hours. Then after the fish have been packed the shrinkage will continue until finally the fish reaches the consumer; and both the wholesaler and the retailer must take care of their own shrinkage while the fish is in their possession. As Mr. Loggie has pointed out, fish sold f.o.b. shipping point become the property of the purchaser, and he has got to take care of that shrinkage until he sells them. It is, of course, greater on cod and haddock than on fish like salmon and halibut, but I would also draw attention to the fact which Mr. Short brought out, that there should not be much shrinkage in frozen products—as a matter of fact, the man who freezes the fish and glazes it gains weight, 100 pound of lake or Atlantic fish frozen and glazed will weigh more than 100 pounds. That is just as natural as the shrinkage, because you can't put the glazing on without adding to the weight of the fish and you have to take that, although the fact is that you are probably paying for perhaps two or three per cent of ice. The retailer has got to take care of that, and you can't handle your stuff without doing so.

QUESTION: Are the fish weighed before being glazed?

THE CHAIRMAN: No; after.

QUESTION: There is nothing allowed for that ice? (A Voice: Yes; there is an allowance made.)

MR. BRITTAIN: Taking the case of salt fish, this fish will start to shrink and keep on shrinking; put it into salt pickle and perhaps it will shrink two pounds to make one, and if you go to work and put it in the sun it shrinks three pounds. When we sell boneless cod and other salt fish, our firm always have it distinctly understood that we sell f.o.b. cars and

guarantee to give the full weight. If the business is of sufficient volume we ask the customer to appoint or send someone to see that they are getting fair weight. Even then, when they get the salt fish in Gloucester, Mass., perhaps they find on taking it out that it has shrunk ten per cent sometimes in transit. Then after it is out of pickle and starts to drain off, the more you press the weight on the more it shrinks. In the past the United States people took advantage of us, they wanted twenty-four pounds allowance, one man even wanted twenty-five pounds, but the shippers said, "Here, the only fair way to do is to sell f.o.b. shipping point. You can take care of it after it has left our hands."

THE CHAIRMAN: I think the legal phrase "in possession" is applicable here; after the bill of lading is signed the fish is in your possession and becomes your goods, the shipper can't do anything after that. Once the bill of lading has been signed for 1000 pounds of fish delivered to the transportation company it is your goods, you are the only man that can endorse that bill of lading. The goods belong to you, they are then in your possession, if you order f.o.b. shipping point. If you buy in Montreal, of course, you get the weight you actually pay for, but the man who imports from the shipper has to take charge of that 5 per cent shrinkage. The fisherman in the first instance takes care of his shrinkage by giving to the man that he lands to the 100 pounds weight. That man puts it on ice and weighs it the same day or the next day and finds he has got 5 per cent to take care of before it is shipped. Then it goes to the man who orders; the producer has taken care of the shrinkage while in his possession and then after the bill of lading is signed the man who purchases has to take care of the shrinkage from then until the time he sells it to his customer, and so on. The shrinkage that there is in transit must be taken care of by the owners of the fish at the time.

There is sometimes a difficulty when washing the fish; if your men are not careful they can put in 5 per cent of water, but as a rule these fish are drained very carefully. Again, in cold weather there will be a percentage of ice to take into consideration, and this shortage is usually avoided by giving a little extra weight—the trade generally want to give the 100 pounds full weight and then feel that is all that they are entitled to do, because they have already taken care of the shrinkage while in their possession. A great deal depends on the weather conditions under which the fish are packed, but in all cases I think the 100 pounds weight is given by the shipper.

(VOICE: Except tommy cods.)

I think tommy cods, like everything else, should be sold and bought by weight. You know what the natural shrinkage would be if the fish thawed and froze and thawed and froze again, a much greater shrinkage than if the fish remained in a frozen state.

Mr. H. A. LETOURNEAU (of Montreal): The way we get the stuff we are in a handicapped position as far as supplying the trade is concerned. Suppose we buy fillets or haddies in fifteen or thirty pound boxes. I take the box as I got it, it weighs fifteen pounds or as it is marked, and I send it to my customer. About an hour after I am called to the telephone: "I got a box of haddies and I just weighed it and it only weighs thirteen and a half pounds." Well, I can't lose his trade and I have to give him credit for it, and

after I give him this allowance I am making six cents on the box, where I should make eighteen, and we have got to do it to keep our trade. Last year I got three hundred half-barrels of salt herring, marked 100 pounds each, from Halifax, and I sold it out to about twenty-five people, and five or six out of the twenty-five who bought the herring weighed their fish to find out whether to sell by the dozen or the pound, and they found only 78 lbs. in each 100-lb. barrel. What shall I do? Well, I have to lose that much on each barrel, and not only this, but most times pay the draft which is often attached to the bill of lading. I do not see where we would get any protection that way and if we have to put up the price, I am stuck again, I am handicapped in selling, because I have to face three hundred complaints, where the wholesaler has only perhaps two or three. So I think there is a lack of protection for the retailers.

Mr. LOGGIE: I do not think there should be this shrinkage on pickled herring. I think the goods must have been short packed by the shipper and he should be held responsible.

Mr. LETOURNEAU: I spoke about it to the shipper's agent—who is right here to-day, and it was put down to the natural shrinkage. I am willing to say that there cannot be any more than 3 per cent shrinkage on fresh fish. But we have got a keen competition and are selling haddock and cod at jobbing prices, and I do not see if we have got to lose three per cent out of a 100 lb. case that we can make a living. As far as tommy cod is concerned, these last two years there has been great competition in the price because they are a very cheap fish. I do not say the weight is short on purpose, but those barrels, why, if you packed them so tight that you jumped on them you could not put 100 pounds in those barrels. So I think it should be worked out to satisfy the jobber. The case is harder for us, we have to lose more than the shipper, and we have to contend with the public.

Mr. BINNS: I remember the words of the chairman of the Food Board yesterday, he reminded us that we should not be confined to one particular line. We are in the general fish business. I am now speaking for my firm as their representative. We are not particular whether we sell haddock or cod or pickled fish or lake fish or Pacific fish or even Pacific flat fish, if necessary, we are in business to supply the people with what they want. We can give them a few suggestions, however, as to what to buy, and if Dr. Adam Short came into my store to buy fish I would certainly suggest to him that he should buy something where I knew I was liable to make a little. If I see that I can't make money on haddock, if I see that the Atlantic people are not willing to be reasonably generous, that is their business; my business is to sell fish, not Atlantic or Pacific or lake fish particularly, but the fish that I am going to make money on. I thank you for the way you have discussed this paper. When I got it typed, they all told me I had awful nerve, and when I was on the way to Halifax a couple of days ago I thought my nerve was gone, but I guess it is back. (Laughter: "It is back, all right.")

Mr. BYRNE: The question of pickled herring—the case mentioned—I think is a case of pushing what is known as the fishermen's pack. That is, the wholesale dealer at the producing end takes over from the fishermen in small lots, and I do not think the case mentioned of these 300 half-barrels is a question for

us at all: it is simply dishonest treatment, dishonest weight, the packages are marked 100 pounds, but they never had 100 pounds packed in them.

The other question raised was a question of the weight of fresh fish, which is known to shrink in transit, and I want to particularize one point that occurs in Montreal and no doubt in Toronto or any of the other large centres where quantities of these fish are re-sold in the original package. In Montreal we quote the trade a price f.o.b. the shipping point, and it is usually quoted this way I know by the Maritime Fish Corporation. If the fish are to be shipped by express the price is f.o.b. the shipping point, and the buyer bears the express charges and the fish are shipped direct to him. If, however, he desires to get a lower transportation cost by having the goods shipped by faster freight or by taking advantage of the carload rate, then the price named is delivered Montreal, but that price is based on the f.o.b. price, and we do not at any time consider that the wholesale dealer or the shipper or the producer assumes the shrinkage which will take place while in transit. That is the condition which prevails in Montreal with the trade, several dealers get a carload together, to get the faster freight service which is available and which permits a lower transportation cost and better shipping conditions than if shipped by express. I am, of course, referring now to the refrigerator cars which are iced at the expense of the buyer or receiver of the fish, who pays when small shipments are put into the one car about 10 per cent extra on the freight charges to cover the cost of the ice. When these fish are delivered in Montreal they are invoiced by the dealers there at the marked weights which the boxes contained when shipped up, and if that rule did not prevail then it would have to be a basis of charging the f.o.b. price the same as for express shipments and proportioning the amount of the charges, so much per box, per case, among the dealers who bought the car. It is simply an arrangement to make possible a straight price and avoid unnecessary details.

About this shrinkage on haddies, Mr. Chairman. There is a shrinkage in the winter time which occurs on haddies, but which on a fifteen pound box should not amount to more than half or three-quarters of a pound. That is due to the draining, and we must distinguish what the previous chairman said about the weights gained in freezing when speaking of finnan haddies and fillets, because these are smoked fish that you cannot glaze, and a box of haddies packed fifteen pounds and frozen in one of our artificial freezers in the east here would have in two months, say, a shrinkage of at least one-quarter to three-quarters of a pound on each case. I know from my own experience that we generally find the boxes of haddies will run to half a pound short, that is because they cannot sometimes, in working quickly at the point of packing, the men cannot get the fish, the exact fish to make the weight just even. I have also found boxes marked fifteen pounds containing fifteen and a half and even sixteen.

So I am of the opinion that the idea is to determine what the natural shrinkage on the fish should be, and as I say, in the case of fillets or haddies it would be about half a pound.

CHAIRMAN WILSON: Gentlemen, this paper of Mr. Binns has certainly brought out a lot of valuable suggestions, and I hope that the incoming committees will

be able to get together and endeavor to work out something that is going to be equitable to the small fisherman, the small retailer, the wholesale men and the producers all combined.

Adjourned until Thursday, August 8th.

Third Day

Thursday, August 8th.

The following paper, prepared by Mr. A. H. Whitman, of Halifax, who could not be present, was read by the President:—

FISHERIES ADMINISTRATION.

By

A. H. WHITMAN, of Halifax.

Some ten or more years ago the Halifax Board of Trade, through its Fisheries Committee, endeavoured to persuade the Dominion Government to apply the Administration of the Fisheries a modification of the Fishery Board System so successfully carried out in Scotland and Norway. The project was strenuously opposed by the Fishermen's Unions of Nova Scotia, giving the Government a good excuse for continuing the policy of drift that has always characterized the Fisheries Department.

At the time referred to, the benefits that would accrue from the application to the pickled fish industry of an act similar to the Fruit Act—the adoption of a standard barrel and having advisory fishery boards in the various fishing centers, were duly set out in pamphlets issued by the Halifax Board of Trade.

Since that time the writer has somewhat changed his views in regard to depending upon the Government for the working out of many of the details in regard to fishing operations, and has been in a position to prove that the merchant can, to a great extent, inaugurate improved methods, better results to the fishermen, as well as additional profit to him. To-day, in a number of localities, the merchant is buying Codfish, Herring and Mackerel in a fresh state from the fishermen, paying comparatively better prices than would result to them if they cured their own product. By having the fish carefully prepared and by using high-class barrels, the merchant is able to obtain a much better price than can be had for the usual product as entirely produced by the fishermen.

As an illustration of this I would refer to the Cape Breton fat Mackerel, which on the West Coast of Cape Breton are to a great extent bought by the merchants from the fishermen ex boats, and which the merchants after carefully curing and packing at their own plants, sell for from \$2.00 to \$5.00 per barrel more than identically the same fish bought by them after being split and cured by the fishermen. Also, in order to have a superior pickled cured Codfish, suitable for the American market, it is necessary in most localities for the merchant to have his own splitters, thus producing a high-class article, the extra returns for which more than offset the extra cost.

I am not stating the above facts as a reflection on the fishermen, many of whom can and do produce a high-class article, but their efforts are spoiled by the carelessness or indifference of others.

Now, the point I wish to make is this, that the merchant has it in his own hands to apply to his own busi-

ness the use of high-class packages and the production of high-class pickled fish as far as his own establishments are concerned, but there remains large sections of our Coast line where there are no merchants' establishments working on improved lines, and, therefore, I have no hesitation in saying that the reorganization of the Fisheries Department, with the establishment of Provincial Fishery Boards or Commissions, along with the enactment and adequate carrying out of progressive laws and regulations in regard to packages and the curing of fish, cannot but eventually bring better returns to the fishermen, and result in materially increasing the fishing industry.

The merchant who has developed his business along the lines indicated above has more or less lost interest in the movement to bring about reforms through the Fisheries Department. I, however, consider this a narrow view of the situation, and consider that the fisheries of Canada are of sufficient importance to warrant a further effort to remedy matters. I maintain that there should be a Minister of Fisheries; that the Administration of the fisheries should not any longer be tagged on to the Department of Naval Service. The Administration of the Fisheries, previous to the War, left much to be desired, but since the War, the Naval Service has quite overshadowed the Fisheries; as a matter of fact, there is little or no connection between the Fisheries and Naval Service, and there should be no difficulty in separating the Administration. If the Government cannot be made to realize that the Fisheries are of sufficient importance to have a separate Minister, there is the alternative of appointing a Minister of Natural Resources, combining the Fisheries the Mines and the Forests, which I would consider a big step in advance of the present conditions, under which the Fisheries have practically no attention whatever.

I regret being unable to personally present my views in this matter, and trust that the Canadian Fisheries Association will see its way to take action towards putting into effect the policy set forth in this paper.

Resolutions Passed at the Annual Convention of Canadian Fish Association, Halifax.

Resolution No. 1.—Appreciating H. B. Thomson and His Work.

The Canadian Fisheries Association in Annual Convention assembled, desires to express its appreciation to Mr. H. B. Thompson for his presence at their Convention and for the interesting and valuable address made by him to the members, and takes this opportunity to pledge their continued support and co-operation to the Canada Food Board in their effort to increase the production of Food, Fishes, and conserve Food Stuffs, which is so necessary to the winning of the Allied cause.

Resolution No. 2.—Fresh Fish Transportation from Atlantic Coast.

WHEREAS transportation is a vital matter in connection with the distribution of perishable fish,

AND WHEREAS express is the only satisfactory method of distributing small shipments from points of production to points of distribution and from terminal points of carload shipments such as Montreal and Toronto, to the outlying points of consumption, and also in view of the fact that the small shipment is the na-

tural forerunner of the carload shipment to any point,

BE IT THEREFORE RESOLVED that the Canadian Fisheries Association in Annual Convention assembled, unanimously request that at this time the Department of Naval Service do not change the system by which the present large and satisfactory consumption of fresh fish has been built up. The introduction of the Sea Food Special Fast Freight Service, while good in itself, cannot entirely replace the service of less than carload shipments by express. Furthermore, the introduction of such a drastic change without sufficient notice to allow the trade to adjust their business to the new conditions, is a serious hardship. If the Department considers that the increased shipments are likely to make demands in excess of the appropriation available, the matter can be adjusted with the least inconvenience to the fish business, by a conference with representatives of producers and distributors.

We would particularly emphasize that the service from the Atlantic should be at least, one express refrigerator car on the Ocean, Ltd., and two express refrigerator cars on the Maritime Express, from Mulgrave and Halifax to Montreal and Toronto, daily. Any interference with this service would materially affect the quantities of fresh fish moved from the Atlantic.

We would further suggest that the Department of Naval Service provide that the common carriers exercise special care in the handling of fish shipments. At transfer points, facilities should be provided for the keeping of the fish out of the sun, so far as possible, and in transit the fish should be kept away from heat in cars and from heated cars.

H. B. SHORT, speaking on Resolution, at 11.15 a.m., when the reporter arrived.

We have no equipment on our section whatever except the express, and we have no express refrigeration at all. I think that this association should endeavor to get a part of the same equipment to serve the western part of the province of Nova Scotia and a section of the province of New Brunswick (Hear, hear.) In the counties of Digby and Yarmouth there are large producers of fresh and smoked fish, and it is absolutely necessary that we get this to market, but if we have no facilities in that end of the province and you get all these facilities at the eastern end, why it is only fair to suppose that in a little while our business is going to peter out to nothing; and although I should, of course, be glad for you to have this equipment in the eastern part, it seems to me that it is not fair that you should give all the equipment to one section of the Province and none to the other. We must get what we are entitled to without having to do a lot of scraping over it, and I am going to keep at it until we do get it. I would like the Association to take the western part of the province into consideration in connection with this equipment.

Mr. SPOONER: I understand the C. P. R. have a number of refrigerator cars. Have the shippers asked for any?

Mr. SHORT: Sure they have.

Mr. SPOONER: What was the reply?

Mr. SHORT: Give us a carload; if we guaranteed a carload they would give us a car. You don't do that even there.

Mr. SPOONER: In express refrigerators they require certain minimum quantities.

Mr. SHORT: In one sense. But last year at one time we had an order for a full carload from Toronto to

go by express. It had to leave Digby on Friday and it was absolutely impossible for us to get a refrigerator car and place it in St. John. As a result, we lost the trade because we could not deliver that car in Toronto until Monday.

Mr. SPOONER: The trouble seems to be that the cars were not held at a point where you could get them; the Dominion Express certainly have the cars.

Mr. SHORT: They have all sorts of equipment for bringing the stuff from the west.

Mr. BRITTAIN: If the C. P. R. is not looking for business to-day they are going to look for it sooner or later, there is going to be competition for business. Now from a business standpoint, could not some arrangement be made with the C. G. R. that they have a car at St. John to go forward to Moncton to connect with the Sea Food Special and help make up the tonnage on the Special, thereby reducing express shipments—which they all ask us to try to do. Perhaps some arrangement of this sort could be made.

Mr. SPOONER: You could probably have a full carload, Mr. Short, quite often—a minimum carload.

Mr. BRITTAIN: Have a minimum, and then there would be no trouble.

Mr. SPOONER: Oh no, the minimum is where the trouble comes.

Mr. WELDON (Can. Govt. Rlys.): If we brought down refrigerator cars, is the equipment good? Yes. We have recently ordered one hundred refrigerator cars to be delivered just as soon as we can get them and we are placing another hundred on order, so that we ought to be fairly well equipped with that class of car soon. As for running a car from St. John, provided the quantities are obtained I see no difficulty at all. If you can deliver the fish at St. John so that it can be moved out in the evening to reach Moncton and make a connection with the Sea Food Special, as certain cars of some other classes of goods are doing at the present time every Thursday, Friday and Saturday, I see no difficulty at all in taking advantage of the Sea Food Special. But as I said before, when it comes to running express refrigerators on our passenger trains, if you keep adding cars, for instance from the Halifax and South Western section and some from the Dominion Atlantic section, you very soon have a train of express cars, and that would perhaps be a bad thing for all of us. I do not think, however, that there would be any difficulty about having the fish move through to Montreal by the Sea Food Special, if the cars leave St. John, Halifax and Mulgrave to connect with it at Moncton.

Mr. SPOONER: Is it express or freight refrigerators you have reference to?

Mr. WELDON: Express.

Mr. SPOONER: Would not that help you out from your district?

Mr. SHORT: I understand we could not connect with it, we could get there the next day, but there would be twenty-four hours delay.

Mr. SPOONER: There would be a delay in shipping direct over the C. P. R. from St. John. They have much quicker time.

Mr. BRITTAIN: Let these trains all feed in to the Sea Food Special and then consolidate into the one train. Gather it up from points along the Halifax line, take up the St. John stuff and put it all on the Sea Food Special, consolidating into the one train to go through to Montreal.

Mr. SHORT: I was speaking of shipments less than carload.

Mr. BRITTAIN: Perhaps Mr. Weldon could be induced to run a car on those three days a week on the minimum of 10,000 pounds, and if there was not enough somebody else could be brought in to take care of these extra cars until the thing got running smoothly. It would give the service you want, then you could have the C. P. R. as you have it to-day and the express regular over the C. G. R. as in the past.

Mr. SHORT: If arrangements could be made with the C. G. R. to have a refrigerator car there to connect with that at Moncton it would serve us first-rate, that is, if they undertook to take shipments less than carload.

THE CHAIRMAN: I do not know if Mr. Weldon paid particular attention to the paper on Steam Trawling read this morning. It is aggregated that a steam trawler produces 150,000 to 300,000 pounds a week. There are 5 steam trawlers operating on the coast of Nova Scotia at the present time, so that there would be no trouble as far as filling up that Sea Food Special. If the railway will help us along, in a little while perhaps we will be making them run trains every day a week the trade would develop even as it has done in the old country where they have to run fresh fish trains from Grimsby and Yarmouth in two sections. This may be looking rather far into the future perhaps, but at the same time it goes to show that the production end has not been neglected and that transportation is the next link in the chain; as soon as this is developed sufficiently the distributors will have to look after it, and then the consumers. They are willing to help us out provided we can give them the goods in the best possible condition for their consumption. Transportation is the first and we consider at this time the weakest link in the chain; and it is not by way of criticism that we wish to lay the matter before the railroad for, as Mr. Brittain has said, the C. P. R. has done more than any other railway in Canada for the development of the Atlantic. But on the other hand look what it has done for the Pacific; and we believe down here that an equal development would take place at the Atlantic sea board if we could get the proper transportation facilities. We have the distributing end of this matter fairly well organized now and it is improving all the time; the Food Board has done a great deal during the past year towards helping in this way. The production end has also developed greatly in the past year; and so we want to get transportation—the connecting link between the two—in line.

Resolution carried.

Resolution No. 3.—Transportation of Fish From Great Lakes.

WHEREAS fishermen in the lake districts in Canada and dealers in the United States, have, during the present season, suffered great loss owing to delays in transit and careless handling of Fish by the common carriers handling like fish shipments from Canadian points to American points,

AND WHEREAS considerable loss of Food Fish has resulted,

BE IT THEREFORE RESOLVED that the Canadian Fisheries Association in Annual Convention assembled, request that the officials of the Dominion and American Express Companies, take special care in the handling and transferring of Fish shipments from Can-

ada to the United States, giving preference in forwarding same, and, if the Canada Food Board and the American Food Administration, deem it necessary, call a joint conference with the Express Companies, to provide special service for these shipments.

Mr. H. S. CORNELL (of Port Stanley): Mr. President and gentlemen: I do not think it is necessary for me to say anything further as I have already spoken on this subject. Conditions are very serious with us as about seventy-five percent of our fish find a market in New York, Chicago, Boston and Philadelphia. We have had such very unsatisfactory service given our shipments that I may be pardoned if I illustrate. Under ordinary conditions we would make a shipment Saturday say; this ought to arrive in New York for the Monday morning market, but in several cases this season this fish which has been shipped out on Saturday, perhaps fifty to a hundred boxes in one shipment, arrives in New York, twenty-five boxes perhaps on Tuesday and the balance of the shipment on Friday. You can imagine in what condition these fish would be, no arrangements for re-icing or anything of the kind; and they have to be opened up on the open market and sold to the highest bidder. They come in on a dray or express wagon, and a gong sounds which brings a crowd of Jews, who buy a box each perhaps at auction. When a box of these fish is opened they certainly do not look attractive, there is no ice left and whatever little sawdust or anything of that nature was sticking to the ice will show on top of the fish, and they look about 15 or 20 per cent worse than they really are. The value has depreciated about fifty per cent; and as for the portion that did not arrive until the following Friday, they would be totally unfit for food and condemned.

Resolution carried.

Resolution No. 4.—International Scientific Commission.

WHEREAS there are large areas of Deep-Sea Fishing grounds off the Atlantic and Pacific Coasts of the Continent of North America, where much scientific work might be done of value to the commercial fisheries, particularly in the way of mapping grounds and determining the habits and seasons of the Fishes that frequent them,

AND WHEREAS this work is of mutual interest and value to the Fishing Industries of the United States, Dominion of Canada, and the Dominion of Newfoundland, and for other international considerations should be undertaken by these three countries,

BE IT THEREFORE RESOLVED that the Canadian Fisheries Association, in Annual Convention assembled, respectfully recommends to the Governments of these three countries, the formation of a permanent international scientific commission to collect scientific data, statistics of resources and production and direct surveying of Fish grounds common to two or more of these countries.

THE CHAIRMAN: For the information of some of the members not present when the discussion on this matter took place, I may say that this is along the lines of what has been done in regard to the North Sea fisheries; the countries surrounding the North Sea got together and appointed scientific investigating committees to get the information and data necessary to the preservation and development of the fisheries. I think that there are one or two men from Newfound-

land here to-day, and we would like to hear their views on this matter.

Mr. CHETWYND: I am sorry that Mr. Stone is not here himself. I think the resolution is all right, speaking from my own personal standpoint, although there is, of course, much that could be said. But I do not see anything in it which should not have the co-operation of the Newfoundland Government. I think the resolution is a very good one.

Resolution carried.

Resolution No. 5.—Advise Industry of Departmental Changes.

WHEREAS there have been several instances of hasty and ill-advised legislation and changes in administrative regulations that have not been in the interests of the commercial fisheries of Canada, which have, in some cases, entailed losses to those engaged in them,

BE IT THEREFORE RESOLVED that the Canadian Fisheries Association, in Annual Convention assembled, request that the Federal and Provincial Departments advise our Secretary of all proposed legislation and intended changes in the administrative regulations and allow a reasonable time for our association to communicate with our branches and affiliated organizations in the districts affected and report the results of these communications to the Department.

Read and carried.

Resolution No. 6.—First Inspection Act be Made Compulsory.

WHEREAS the inspection of Pickled Fish and barrels under the Fish Inspection Act of 1914, is optional,

AND WHEREAS the purpose of this Act has been generally commended and its spirit and intentions accepted by those engaged in this branch of the Fish Industry,

AND WHEREAS it has been found difficult to induce all coopers to produce the proper type of barrel and all packers to raise their standard of curing under optional inspection,

AND WHEREAS it is in the best interests of the Industry to prevent the marketing of carelessly packed fish in unsuitable containers,

RESOLVED that the Canadian Fisheries Association in Annual Convention assembled, unanimously recommends that the Fish Inspection Act be so amended as to make the inspection of pickled fish and barrels compulsory.

Mr. LOGGIE: It seems to me that this is a matter which requires consideration, and I do not think you should hastily pass this resolution. The matter has been fully discussed before Committees of the House and they found it not wise to make it compulsory. Every packer who can, will take advantage of it, but there are certain circumstances sometimes when it is impractical to take advantage of it. I think you should hesitate somewhat about passing a resolution of this nature, without more time to consider and reflect on the whole situation.

THE CHAIRMAN: A discussion took place yesterday in regard to this question, and there were specific instances given where packages marked 100 pounds of salt herring when delivered in Montreal only turned out to contain 75 pounds. As to being hasty in the matter, it is seven years since it was first brought up before the Fisheries Committee of the Halifax Board of Trade. The enforcement of this inspection cannot

possibly be considered hasty at all, because you have had three or four years' notice by the Department that the Department desired, the trade desired, the consumer desired, and the industry desired these standard packages and weights. Now, we have all had a chance to know what the issue is, and what is the very best thing to do. Besides this, I do not think that as a member of this Association and as a citizen, I ought to allow conditions to prevail which destroy fish, for that is what we are doing. What is the good of increasing production when you waste what you already have—you are undoing with one hand what you are trying to do with the other. I contend that it is the absolute duty of the Department to enforce this inspection for that very reason, and for no other reason. (Hear, hear.) That is what it means. The fish are produced all right, they come from the water all right, but we allow conditions to prevail that are absolutely wasting a whole lot of that fish. After six years to think about it, are we justified in letting conditions like this continue, are we willing that these wasteful conditions should prevail any longer? (No, no. "It is a question.")

Resolution carried.

Resolution No. 7.—Ontario's Fish Policy Condemned.

WHEREAS the Government of Ontario is engaged in the production and distribution of Fish from waters closed to the licensed commercial fishermen,

AND WHEREAS the said Government is also taking from such licensed commercial fishermen a portion of their catch from the licensed Ontario waters at arbitrary prices,

AND WHEREAS unprecedented interference has resulted in loss to the fishermen and confusion to distributors, and dragged the industry into political interference and unfair preference and disorganized this established industry,

AND WHEREAS the Ontario Government has refused to appoint a commission or otherwise publicly consider the loss and hardships which their policy has entailed,

BE IT THEREFORE RESOLVED that the Canadian Fisheries' Association in Annual Convention assembled, protests against the above mentioned injustices which are so detrimentally affecting the fish industry of that Province.

Carried.

Resolution No. 8.—Federal Department of Fisheries Should be Re-organized.

WHEREAS the administration of the Fisheries branch of the Department has been over-shadowed in the past by the Naval branch.

AND WHEREAS there is little or no connection between the Fisheries and Naval Service,

AND WHEREAS it is very advisable that the administration of the Fisheries should be under the jurisdiction of a responsible official occupying, at least, the status of Deputy Minister,

BE IT THEREFORE RESOLVED that the Canadian Fisheries Association in Annual Convention assembled, unanimously recommend that if the Dominion Government does not consider it possible to appoint a Minister of Fisheries, that it be strongly urged to appoint a Minister of Natural Resources, who shall have charge of the administration of Canada's Mines, Forests, and Fisheries, with a Deputy Minister at the head of the administrative work in connection with

each of these three important natural resources.

THE CHAIRMAN: The last resolution, and one added this morning, is of considerable importance, and left to the last probably for that reason. It is a matter that might possibly change the whole trend of the industry as far as the fishing is concerned. Some effort has been expended in the past in an endeavor to try to get the Fisheries Department under a Minister who would really take some interest in the thing, a Minister having the time and the talent to devote to the industry. This has always been felt to be one of the great weaknesses in connection with the development of the fisheries, and it is a change which should have been effected twenty-five years ago, but which has not yet been achieved. I notice in Mr. Whitman's paper this morning a complaint of a policy of drifting, and it is not drift net fishing he meant, but drifting without a net and really without a Minister. The Minister's activities are occupied in other branches of his Department, he is bound up with the Marine and the Naval Departments. The Marine Department has an agent here, but the fisheries have never had an agent or an office.

This recommendation calls for the establishment of a Ministry of Natural Resources to take under its wing the Canadian mines, forests and fisheries. At the present time the mines are under the Secretary of State, the forests under the Interior Department and the fisheries under the Naval Department, and the latter are really under a minister who is the Minister of Naval Service. I do not know just what has taken place in regard to the mines and forests, how much they have been held up in the matter of development, but I certainly know how the fisheries have been handicapped on account of being under the Naval Service. You cannot censure or blame a Minister for devoting his efforts and energies to the Naval side of his branch in wartime, but even before the war began the same situation seemed to prevail, the fisheries did not get the proper attention. The fisheries service is not what is considered a large spending department, as Departments are considered at Ottawa, the others are the large spending Departments; and, of course, it is natural that the financial side of the problem is that which appeals most strongly to a Minister, that is what he is usually criticized for on the floors of the House.

Personally, I am a strong advocate of this thing, although I do not want to foist my personal views on the Convention. I know, however, that a large number of the executive of the Association feel much the same way, and believe that it would be a stride, and a long stride, in the right direction if we could get such a Department established, not only for the fisheries, but for the other natural resources of Canada. As the Food Controller stated to us yesterday, we have to develop our natural resources and become an exporting country if we want to pay our war debt.

I should like an expression of opinion on this matter.

Mr. HARPELL: This is a subject to which I have given some thought and a subject on which I have had an opportunity of hearing some expression from one at least of our sister societies—that of mines. The industries of mines, forests and fisheries have a good deal in common, they are all industries in outlying districts and all industries engaged in the development of the natural resources of the country.

They are also industries that are partially under the jurisdiction of the provinces and partially under the jurisdiction of the federal authorities at Ottawa. We know what a very great incentive it was and how greatly it facilitated the development of agriculture when this industry was brought under the Minister of Agriculture at Ottawa and a co-ordinate department or portfolio of agriculture in each of the provinces. So that when a matter pertaining to agriculture comes up in which both the Dominion and a province are interested, they can easily co-operate. Not so in connection with the industries of mines, forests and fisheries. When an official from Ottawa from the Department of Naval Service (under which the fisheries are at Ottawa) goes to Toronto to co-operate or consider a subject of common interest with the Department having charge of the fisheries there, he has to go to the Department of Public Works. When he goes to British Columbia he has to go to a different official, and when he goes to Quebec, he has to go to a different official again. In each of these three provinces the province has considerable to say in the matter of its fisheries, so that I think there would be much gained by having a portfolio in the Federal Government, which could be easily duplicated in each of the Provincial Governments. If there was a portfolio of Forests, Mines and Fisheries that would be comparatively easy. In two of the Provinces, viz., the province of Quebec and the province of Ontario, there would not need to be much adjustment. In the Ontario province there is a portfolio of Mines, Forests and Lands, and the Department of Fisheries is under the Department of Public Works. It would require very little adjustment there to establish a portfolio of Mines, Forests and Fisheries. In the Province of Quebec there is a Department of Colonization, Mines and Forests, so that very little adjustment would be needed there. The greatest adjustment required would be in the Federal Government at Ottawa. As your President has pointed out, and as I think every person in the country will agree, these natural resources of Canada are her trump cards, and yet they are handled in a most promiscuous manner and have been almost since the beginning of Confederation. The immense developments which have taken place during recent years justify some adjustment in keeping with the importance of these industries.

This matter has already been taken up by the Canadian Mining Institute. The Canadian Mining Institute is one of our oldest industrial organizations, formed one of our oldest industrial organizations, formed along lines similar to those of the Canadian Fisheries Association. This Institute began to advocate for a Minister of Mines in the early nineties. They finally succeeded, and the Honourable Mr. Templeton, as you will remember, was Minister of Mines for a number of years. But experience proved it such a small portfolio that the Minister did not carry enough weight, did not have the status in the Cabinet which it was necessary he should have in order to carry through all the important changes and to administer that resource in the way the industry felt that it should be administered. There is a good deal in that: a minister in the Cabinet takes his place and exercises influence in the Cabinet and on the floor of the House in accordance with the size of the portfolio he holds. Well, some years ago that portfolio was abolished, and since then the Department of Mines has been under the Secretary

of State; and very often its affairs are handled by men who know little or nothing about the industry. In the Canadian Mining Institute they tell a story of an interview with the Minister, at which he wanted to know whether Cobalt was the name of a place or the name of a mineral. Now at a meeting of the Canadian Mining Institute not long since, the whole matter was discussed with some of the principal officials, and it was quite unanimously decided that it would be a step in the right direction to form a portfolio of Natural Resources, covering these three great resources of Mines, Forests and Fisheries, with a Deputy-Minister at the head of each Department.

Dr. MACKAY: I think Mr. Harpell has made a very strong case for this resolution. The fact that a Minister of Mines was for some time in existence, shows that there is a very good ground for the present scheme. The mines alone proved too small a portfolio, but with the three natural resources combined there would be sufficient work for a full-sized department, and if you wanted a specialist for each of the three sub-divisions that could be had of course in the Deputy-Minister. I do not think we should be making any mistake at all in recommending this resolution or in legislating for it if we had the power to do so, but certainly we should recommend its consideration.

Mr. SINCLAIR (M.P. for Guysborough): Mr. Chairman, I am not a member of this Association, and therefore I do not suppose that I have any right to put my opinion forward; but I have one criticism to make, and that is that our Departments have grown very rapidly of late years. We used to get along well in Canada with fourteen, but I understand we now have twenty-three and are asking for another one. I would prefer a resolution pointing to some re-adjustment of the present departments and giving a good place to the fisheries. No man can take a greater interest in the development of our fishing industry than I do; I had the honour to propose the Fisheries Committee in the Dominion Parliament, —for many years, twenty-five or thirty years, we did not have a committee meeting to discuss the fishery questions, so little interest was taken in the fisheries at the Federal Parliament, and when I went there fourteen years ago, that was the condition of affairs. We had mining committees and agricultural committees and committees for nearly everything else, but the men from the maritime parts of Canada did not even meet to discuss those most important questions relating to the fisheries. Now we have a president of the Council who, I understand, sits as you do sir, and a Chairman who once in a while calls a Cabinet meeting, perhaps once a month or oftener; he has a Department and a large staff of officials under him. I would prefer, therefore, that some of the present departments be re-organized in such a way as to give us a man representing the fishing industry. I would rather do that than favour the organization of another one, largely on the question of expense; the organization of a new department means a very large sum of money, it means not only the salary of the Minister but a great sum besides that to pay the official staff.

THE CHAIRMAN: But you understand, sir, that they are already organized; the forests, fisheries and mines are already organized, and it is just a question of taking the staff from the one Department and putting it in another. There would be no expense in that

connection unless it be on account of the Deputy Minister. There would be no expense in connection with the staff, as the staff is already in existence.

Mr. SINCLAIR: But the Naval Department could not dispense with all its officials, and turn them over to the Fisheries.

THE CHAIRMAN: The fisheries branch has nothing to do with the navy, it is a separate branch by itself, except the deputy; I think I expressly mentioned the deputies. I am now talking of the staff.

Mr. SINCLAIR: Well, in that way the expense would not be so great, but I am in favour of a Fisheries Department with a Minister having special charge of the Fisheries and giving it his whole attention. I think that would be a good move. I never could understand just why the fisheries were put in with the navy; the two things did not seem to work together at all. I think it was a blunder to start the Fisheries Department in that way. My view would be to favour the resolution with that reservation—that if possible the Departments be re-organized so as to save the country from a twenty-fourth one.

Mr. HARELL: I would point out that this matter has been discussed with the Ministers of the Cabinet at Ottawa and with several Members of Parliament, and the fact mentioned by Mr. Sinclair was one of the strong features in its favor. It was considered by the Members of the Cabinet, to whom it was represented and by several Members of Parliament, that a readjustment of the present Cabinet could be made to include a Minister of Natural Resources, without adding to the number of portfolios.

Mr. CORNELL: It strikes me that the members of this association are probably not generally as intimately connected with the Department of Marine and Fisheries at Ottawa as we have been. We are so situated on an International Lake that we can only go to the boundary, and there is a systematic poaching carried on by the American people over the boundary line. Now on several occasions we have gone to the Department and asked for a proper patrol whereby this might be stopped, and we have run up against everything that has been set forth in that resolution. Last spring a deputation from our Association went to them and set forth that there was no patrol that was of any practical use. The Department have a boat on there called the "Vigilant." What she was built for I should like to have some of these marine men tell me, we do not know and we cannot find out. She is a beautiful-looking boat but when there is any sea at all she lies in port, and the American people know exactly when the Vigilant will not be there. When the big run comes on in the fall along about the twentieth of November, when the biggest fishing is on, the Vigilant is always laid up.

We went down and asked that there might be something more than a beautifying of the lake by putting that boat and others similar on, that something practical be done and a proper patrol boat put on Lake Erie. The objection was raised that in war time they must curtail expenses. My friend Mr. Brown here pointed out to them that the expense would not be anything. He figured up the cost of the running of the Vigilant for the season, showed them where to buy a boat that would cost a certain amount and figured up what it would cost to equip and run that boat for the season; and he had sufficient money left between the purchase of that boat and the running of

her for the season and the cost of running the Vigilant to charter three other tugs. This would be very much better from a practical standpoint than the Vigilant and there would be a little money over. We showed them an actual economy in war time and a protection that would be something more than a pretended protection, but the answer was, "What are we going to do with the Vigilant? We have her, she is there, we must run her."

Well, the Ontario Government put on a canoe propelled by gas, and it had to be a very fine day indeed when that craft could go out. They soon became aware that they had made a mistake and that boat was sent up to Lake Huron one day on a trip and very fortunately she happened to get burned. "Now," says Mr. Fisher, "I would suggest using the Vigilant." I said, "For goodness sake, send her to Lake Huron to make a trip and be burned, that is the very best thing that could happen to her." But nothing was done.

This resolution that you have before you is the very best resolution that has come before this Committee. (Applause.)

Mr. LOGGIE: Mr. Chairman—I have given this matter considerable thought in the past and I am of the opinion that it would be wise to have a minister directly at the head of the fishing interests of the country, that is to say, rather than have a minister at the head of naval affairs and the fisheries combined with that. I think it would be better to have a separate minister for the fisheries department, or if you like to utilize him as the head of the mines and forests as well I think that could be done for this reason. The Federal Government has not very much to do with the forests; as has been well said, the forests are administered by the provincial governments. In New Brunswick we have a Department known as Lands and Mines, and in all the other provinces except Alberta and Saskatchewan the lands and mines or at any rate the lands are administered by the Provincial governments. If a minister were at the head of the fisheries, the mines and the forests, I do not see that it would be too much work for one man and I am not sure that you would need even a deputy minister any more than the one deputy minister, he could—I think—take it all. I am a member of the Mines Committee in Ottawa, and for the last two or three years we may have had one meeting during the session, so that there surely is not so very much work in regard to the mines and forests. I think perhaps it would be a good move to consolidate some of these departments now in existence and add the fisheries to it, separating them from the Department of Naval Service.

Mr. H. B. SHORT: I notice that your resolution reads "mines, forests and fisheries." Now we have been told by gentlemen present who are in a position to know that both the mines and the forests—so far as the federal government is concerned—are very small, and that the fisheries is the largest department of the three. Why not change it to read: "Minister of Fisheries, Mines and Forests." (Applause.)

THE CHAIRMAN: I might explain that that was simply the modesty of the man who drew the resolution.

Mr. HARELL: If you will pardon my speaking again I would like to say a word in reference to the comparative importance of these three industries, which I neglected to do before. In point of the number of people engaged in it, the largest industry is the fish-

eries; about one hundred thousand people in Canada earn their bread and butter in the fisheries. The mines come next with about eighty thousand people, and the forests are very much less, the industry being much more in the form of large companies. There are two departments of the forestry, one very important and of comparatively recent growth—the pulp and paper industry; in this only about five or six thousand people are engaged, but the products of that industry amount to about \$70,000,000.

In point of value the mines come first, with a production of about \$200,000,000; the forests come next with an aggregate production of about \$150,000,000, I think, although I am speaking from impressions rather than facts; that the fisheries amount to \$50,000,000.

So that you see this new department would be administering to industries in which there are engaged roughly between 250,000 and 300,000 people. Comparing this with agriculture we find that agriculture has about 1,100,000 people—productive people—engaged in it. So that while the new portfolio would not be as large as agriculture, from the point of view of administrative duties the three sub-departments in the aggregate would be much larger as regards either federal or provincial work—that is, provincial work in a number of the provinces and certainly as regards federal work.

Resolution No. 8 carried.

Mr. T. W. C. BINNS: I would like to ask if it is in order for a private member of the association to move a resolution.

THE CHAIRMAN: Most certainly Mr. Binns.

Mr. BINNS moved a resolution with regard to the weight given by the Atlantic producers on fresh fish to Montreal.

Mr. H. B. SHORT: If this resolution comes before the meeting we will certainly be here for a week. There is not a dealer that produces fish who will not have something to say about it. Therefore I move that we do not receive it; we have a lot of work to do yet and our time is getting short.

Mr. BRITTAIN: If this resolution was going to bring any direct results I think perhaps it might be well to bring it along, but I cannot see that it is. The larger corporations producing fish and even some of the very small fishermen are, I know, endeavoring to do the square thing in this matter as well as the retailer and the distributor, and I think that it is something more or less regulated by the man himself; any man purchasing fish can arrange to purchase from the man who gives him the most for his money.

Mr. HARPELL: This deals with the large question of weight, measures and standardization. I understand it is the purpose of the incoming executive to give a good deal of attention to this matter. This is the first year that this very important question has come up, however, and I think it would be well to consider for one or two more years before definitely establishing any principles.

THE CHAIRMAN: The only thing we can do is to hand it to the incoming committee on resolutions. We really have not time to deal with it here, unless it comes up in connection with Mr. Byrne's paper which we are going to have this afternoon, and which will probably deal with the very subject you have dealt with in your resolution, Mr. Binns. This is the only district in the Dominion where cases are not charged

for, and therefore this matter is one in which the producer on the Atlantic seaboard is very much interested. Adjourned until three o'clock, p.m.

"MARKETING."

By D. J. BYRNE, Montreal.

You cannot divorce marketing from transportation without missing an important link between the producer and the consumer, and in connection with the whole question of marketing it should be borne in mind by the producers and particularly by the fishermen themselves, that the greatest of care is necessary from the time the fish are taken from the water. In handling fish products we have all felt the losses and very great disadvantages, and at times serious inconvenience caused both to ourselves and our customers, due to want of care, lack of attention, or perhaps want of the knowledge of what care should be taken by the producer at the point of production. It is hardly necessary to illustrate this point before you gentlemen who are practical fish men and know that fish which has not been properly cared for during the first five or six or eight hours during warm weather, becomes so deteriorated in quality that no efforts which may be put forth afterwards will avail to bring back the loss caused by the neglect during those first few hours. We could interest our fishermen in the question of quality and care of their product from the time it is taken from the water, a lot of the problems we now find so difficult to overcome would be solved.

While on this question of care in production, I may say that it also seems to me, gentlemen, that the great efforts now being made to create a market for varieties heretofore practically unknown or not used commercially enough to make them a business commodity—such as the various kinds of flat fish—will affect the cost of producing even the staple varieties now on the market. When the fishermen can find a market for all kinds of fish which are taken by him, it is natural to suppose that his price can be lowered, because his production will be greater, and after all it is with him a question of a day's pay, and quantity will really produce better results for him than high prices on limited quantities.

This brings up a question which perhaps might be considered in the nature of a dispute between those connected with the trade at inland or distributing points and those at the producing end. There are frequently causes for discussion, Mr. Chairman, and I feel that the time to bring the subjects up and thrash them out is at an annual Convention, such as we are holding to-day, so that any question which interests one section or another of the trade should be brought up here; and one object of these remarks I am going to make after some of the matters have been so fully covered before, is to open discussion on the questions brought up by what I have to say, and I hope through the discussion to lead to an amicable settlement or adjustment of the real or apparent difficulties which can be easily surmounted when we are all working with the same end in view, to conserve our fisheries, to increase the consumption of fish as a food and to develop this great natural resource.

We have discussed rather fully, I think, the question of shrinkage, and it is not my purpose to re-introduce that question here, but I want to talk about a closely

related subject—that question of packages. On the Atlantic coast, at least on the Canadian Atlantic coast, it has not been the custom to charge for the packages in which the product is shipped to inland points for market; we have held out on this question for such a long time because of very keen competition, because when the attempt was made to charge for packages in one section, it was not carried out at all judiciously or regularly in other sections, so that it has never been possible to arrive at a definite conclusion, a uniform regular charge for stipulated packages. I am referring particularly now to the fresh fish trade. As is well known, the custom on the Great Lakes and at all our inland fisheries has always been to charge for the packages—as long as I can remember, we have paid for packages on fish from these centres. Up to recently packages from the Pacific coast were sent free, but that custom no longer prevails, and to-day there is a charge for packages and also charge for the ice used on the cars shipped to the east by western firms. In addition to the Lake and Pacific centres, at other points where fish are produced—the markets of Boston, New York and Portland,—it is customary to charge for the packages. Why should we not regard this now as a general rule, and make a charge for the packages used when shipping the Atlantic fish products to inland points?

When discussing this question some time ago with one of the large dealers, he remarked that there was no need of going over it, as they all knew that you charged for the packages, that the charge for the package was incorporated in the price at which the fish were billed. If that be the case, gentlemen, would it not be more fair, more honest, better all round, to show the charge for the package on the invoice, as is customary in all the other trades, and in most of the other producing centres, instead of camouflaging it in the price at which the fish are billed? Owing to the increased cost of the materials used in making these shipping packages, the increased cost of producing the ice that is used, and the increased cost of labour for making up the boxes, either the packages must be charged for or, if the charge is absorbed in the price of the commodity, the price must be raised. I submit to you, gentlemen, that to me it would seem much fairer, and sounder business principle, to make a direct charge for that package, as is done in the dry goods business, the boot and shoe business, and practically every other legitimate trade. It would not be an innovation, the charge is made in American shipping centres, the charge is made at the Lake shipping points, and now it has become the custom on the West coast, and I think there is no longer any reason for the Atlantic coast shipper to continue furnishing free packages or if not free packages including the cost of the package in the price of the fish.

I have gathered together a few notes in order to cover some of those subjects not previously covered in the papers which have been read on "Transportation" and "Standardization of Markets"; but if I were to attempt to go into the question of marketing from the source or production to the ultimate markets,—why, gentlemen, I would have to confess it beyond me, and it would in any case occupy more time than could be allotted at a meeting of this kind. We are aware that the fisheries of Canada in finding a market for the product reach many distant lands. Take this great

old province of Nova Scotia; for very, very many years the fish products were marketed in Roumania, Portugal, Spain, West Indies, Brazil, and—what may not be generally known—a portion of our products were marketed on the west coast of South America, and the business was done from Hamburg, through German firms. A Canadian fish produced on the continent of American marketed in South America, and first handled and shipped through German concerns! There is now a big movement on foot in the United States for after-the-war conditions, to take care of the South American trade. That the possibilities there are immense I need not remind you, and one of the objects or features of the Committee which is now at work and has been working for six or eight months is to divert the South American trade into North American channels. Before the war, the Germans had complete possession of the South American trade by means of their subsidized steamship lines running from Hamburg and other German ports direct via Cape Horn to the west coast of South America and to the east coast also, and by means of their system of nationalized banks with German native-born employees in the banks, with a nationalized system of credit by which long extended credits with the sanction and backing of the Imperial German Government were possible for those who did their business through these banks—the object throughout being to control the trade in such a way that other countries could not possibly take it from them. Now, I think, our opportunity has come; this great war is making possible a closer union with our ally to the South—the United States—and there is an opportunity for an immensely increased trade with South America, from which we may also receive in return goods such as those we were privileged to see yesterday. In this country it is absolutely necessary that we have a binder twine to use with the sickle in taking care of our crops and manilla and other fibre with which to make the ropes used in shipping, and these, gentlemen, are produced in large quantities, in addition to many of the other products required in our industries, in South America. It seems to me there is a definite object to be attained at the present time, and I feel that our Association would be warranted in requesting the Federal Government of Canada to make such representations as would permit of our people working in close harmony with the already existing committee in the United States, which has for its object the control, or the obtaining of at least a portion of this trade which is not only great to-day, but which will become very much greater in the years ahead.

My disjointed remarks, gentlemen, are merely to bring before you some few points I thought of, not with a view to opening any long discussion, but to set before the members what I considered might perhaps be of benefit in adjusting the differences which exist.

May I be permitted, Mr. Chairman, to refer again to this question of packages, which brings up such a long train of troubles, troubles we only feel vaguely, and trouble we know we have. There are sections where perfectly good fish are shipped in secondhand packages simply because the producer or shipping dealer finds he cannot charge for the package, and he is selling his product at such a low figure that he can only make a living profit. He is disposed, therefore, to make the package cost as small as possible; in order to do so he uses secondhand packages, and very,

very often it means disaster while the fish are in transit—all because of that wrong principle which now prevails of either not charging for the package at all, or of charging for it under the price, consolidated in the price. I feel we have so much to gain in marketing our product in the efforts which could be put forth to improve the quality that other questions are of minor significance. We should have an improved and uniform system prevailing in the producing centres, so that when these fish are marketed they will be in the best possible condition; only in this way can we build up a larger business, a better business, a more profitable business.

Mr. LOGGIE: Do you charge for finnan haddie and kipper boxes?

Mr. BYRNE: To be frank and straightforward, as every fish dealer should be, we do. We must. It is charged in the price. The cost of these packages, as many of you gentlemen know, is high. The cost, when shipping in 15-lb. boxes, to the producer or dealer who ships from the producing point the general cost is practically one cent a pound. It must be incorporated in the price if not charged for as a package. Taking the 30-lb. boxes, the cost of the package has dropped immediately and the cost of the 30-lb. is not much greater than the 15-lb.; so that I think the custom which has now become almost general of making a difference in the quotation on finnan haddies in 15-lb. and 30-lb. boxes and making the price $\frac{1}{2}$ c higher if a portion of the order is required in the smaller package, is the only sound and proper one to follow.

Mr. BINNS: I may surprise you by saying that I agree with a great deal of what Mr. Byrne has said, but there are one or two items which require a little explanation. It has been stated by him that all Lake fish packages are charged for. I can state from my own personal experience as a distributor of—I will say—a large quantity of Lake fish, that for the whole of the fresh Lake fish we handled this year, I think I am correct in saying that we have not paid for a single package. He also remarked that it was usual in other businesses to charge for the package, he mentioned dry goods in particular. I admit possibly it is fair to charge for the packages there, dry goods packages can be used again, and I believe in charging for them and having them returned. But if I go into a store and buy a can of tomatoes I am not charged for the can as well as the tomatoes. We know we have got to pay for the finnan haddie boxes and I certainly agree with Mr. Byrne's suggestions that there should be uniformity; but the uniformity I am in favour of would be to have all the packages charged for in the price of the fish. We would then have a better idea just what percentage of profit we can count on and what to charge for the goods.

Mr. HORNE (of Lockeport): There is no way that I know of that we can include that charge for the boxes in the charge for the fish. Fresh fish quotations are usually three, four, five or six cents a pound and there is no way to work into that quotation the cost of the package. I ship to markets at Boston, New York, Montreal, Toronto, and the West. Boston and New York allow me for cases, Montreal, Toronto and the west allow no charge. Some four years ago I charged for cases, and with very few exceptions the trade accepted the charge made without any difficulty. But about that time Mr. Boutilier and I got into compe-

tition and he did not charge, so I had to stop charging, and since then I have never put it on. The cost of the packages to the producer is one of the most important and expensive things we have to contend with. Take a concern shipping out two hundred to five hundred cases a day. Those cases that cost formerly 60, 70 and 80c are today worth \$1.65; that may mean the difference between profit and loss on the shipment. In fact, I have made shipments to Boston where the only thing I got back was the cost of the cases. It is an extremely important matter, and considering the almost daily advance in the price of lumber it is becoming a matter very burdensome to the producers of fish; and for my part I would like to see a reasonable charge made, provided it had the approval of the distributors. I do not say even that we should charge them the full price, but I certainly think it should be divided so that a part of the burden could be lifted from our shoulders.

Mr. BROWN (of Kingsville, Ont.): What lake did you refer to, Mr. Binns?

Mr. BINNS: Lake Superior, Nipigon, Tipewa—many lakes.

Mr. CORNELL: As far as we are concerned on Lake Erie, the only question whatever of our making a charge for the packages is when we were commanded not to do so by the Imperial Government; they do not allow us for our packages; but in every other instance as far as we are concerned, we always add the price on the package on the invoice, as Mr. James can testify.

Mr. BOWMAN: I think the most vital question that has been raised by Mr. Byrne, is the question of the care of the fish; the question of the package is one which can be settled between the man that ships and the man that wants the goods. The question of the care of the fish is of first importance because, if we can get the fish on to the market in good shape it means that the demand will be increased and the prices better. I have had a good deal of experience in going among the fishermen. It is the duty of the men who are handling the product to keep at the fishermen and educate them in regard to the care of the fish from the fishing ground to the fish house and also in regard to the nets being attended to and not left out too long. We have a certain lake, for example, from which we get a very excellent quality of fish. The Dominion Fish Company were having trouble with the fish and they came to me about it; the fish would come down as pale as if half-boiled (it was a shallow lake which got exceedingly warm in the summer time; and it happened we had a man available who had had considerable experience in the Western lakes—I mean the great West—and we sent him up. He took a quantity of ice out with him in the boat, and as soon as the fish came out of the water they went under the ice. This produced a marvellous difference; fish which heretofore was a nuisance to handle, became one of the best lines that we had, simply because the fish was cared for in the manner I have indicated. This fish could afterwards be kept for days and days, and we still handle this pike fish and consider it one of the best lines we have, and it is just because it is stiffened and cared for right at the point where it is most necessary that it should have attention. Mr. James will remember, no doubt, the carelessness of shipping on the C.P.R.—it got so bad that he had to tell us he did not want any more of these fish.

I have lectured the fishermen time and time again, and although they suffer tremendously in the culling the only answer you get is that you are stealing their fish from them. It is absolutely necessary for everyone connected with the fishermen to keep impressing upon them, keep educating them that the first place to care for the fish is the fishing ground and from there to the fish house; they should be insistently urged to take the greatest care of the fish and bring them to the fish house in good shape—and the rest is easy.

Mr. BYRNE: What is your experience in charging for packages on Lake Erie, Mr. James?

Mr. F. T. JAMES (of Toronto): I never remember getting any that I did not have to pay for. With regard to the charge for packages of fresh fish, I think it is immaterial whether you charge directly or indirectly for them. Mr. Byrne referred to the west coast; one of the largest shippers there told me that the main reason for making that charge was that fish had gone up so high they were a little afraid of the Food Controller if they put it up any higher, so they began charging for the packages. As far as we are concerned, we know the competition would still remain the same as if you charge for your boxes, every man would still be trying to sell a little bit less than the other fellow anyhow. It is a matter for the shippers themselves which way they charge for them. In regard to the statement of Mr. Binns about the Lake fish packages, I have been in this business for a long time and I don't recollect receiving fish from any Lake shipper but that we paid for the boxes. I know this has been a sore spot with Mr. Binns, and when dealing with him what we usually did was to add the cent on to the cost of his fish and let him have the packages free.

Mr. D. HARDING (of Montreal): Is it any advantage to the trade in general to relieve the wholesale man of the burden of the cost of the package and impose it on the retailers? He wishes to be relieved of the cost of the boxes and impose it on the retailers. Would that be any advantage of note to the trade? If he cannot take it out of his customers how are we to take it out of ours?

Mr. BYRNE: The package, like the fish which it contains, becomes the property of the buyer, the retailer or the inland distributor, when it is delivered to the transportation company. I have known retail dealers in the city of Montreal who made a very good profit out of the boxes by selling every one of their empty fresh fish cases to a certain wholesale house who used them for re-packing. But whether to sell or give away or use as firewood, they were the property of the retailer to do as he pleased with, you see, so that I do not think it is a question of transferring the load from one shoulder to another, it is more a question of adjusting the cost to show what the invoice means. The price of the boxes must simply be added in with the express and put on to the cost of the fish; if the boxes are 50c and the express \$1.50, it is 2c a pound to the price of the fish, and that is the only legitimate way to get out of it. It is what you must do. Then the purchaser has the lumber in the boxes for an asset.

Mr. SHORT: I was not in the room when Mr. Byrne read his paper, but I glean from the remarks which have been made since that it is the charge for the package that is under discussion. I see no reason in

the world why the fish industry should not charge for the packages the same as every other industry; in the dry goods business the merchant is charged for the package his goods come in, and the hardware man not only charges the wholesale hardware trade for the boxes but puts on a charge for the cordage as well. Now with the price of lumber and the boxes costing as they are to-day you have got to charge from one cent to a cent and a half a pound more for your product. You are paying for it somewhere, and as Mr. Byrne says, why not put it on the invoice plainly what you are charging for—it is not the cost of the fish, but the cost of the package. Fish dealers in the United States always charge for the packages, you never get your fish without paying for the packages, even if you buy a carload. I sold a few carloads of fish to the United States the other day, and their agent was right there at our place. I said, "How do you want these packed?" There is the case, we can give you these cases for \$1.00." "Well," he said, "if I can get a refrigerator car I will tie them up in 100-lb. bundles." "All right," I said, "but I will have to charge you for the rope." "Oh," he said, "that's all right, we will pay for the ties." Well, you see, it was the custom with them to pay for packages, and why we should not do it I can't understand. Take the haddie boxes, they used to be 6c, today they are 15c. Well, now, that cost has got to be added in the same way. But the fresh fish case costs double what the haddie boxes do, and you used to put 400 in a case where now you can only put 300 in because you have to put in more ice. Somebody has got to stand it. Why not be charged for what you are actually paying for—put it on the invoice.

Mr. BINNS: We retailers understand that the producers are going to make us pay eventually for the cost of the boxes, we don't figure that we are going to get the boxes for nothing. But it seems to me that if it is included in the price, it makes things an awful lot easier. How are we going to know what a box is going to cost us otherwise?

THE CHAIRMAN: There will have to be a standard price so that you will know.

Mr. BINNS: I would just remind the retailers here that this to my mind is the thin end of the wedge. It is not only boxes; as many of you know there are certain times of the year when we get fresh salmon packed in shavings, they will be charging us for the shavings next. As a matter of principle, I am opposed to it.

Mr. CORNELL: I think there is a splendid illustration along that line furnished by the last speaker and Mr. James. When we send Mr. James a box of fish we charge him 60c for the box; when he re-ships that box to our friend in Ottawa, who does not want to be charged up with the package, he adds a cent to the price of the fish. Now, if it were put on the invoice as a separate charge, Mr. Binns would know exactly what he was paying for, but as it is, Mr. James has a rake-off of 40c, in order to satisfy the Ottawa man who does not want to be charged up with his package.

Mr. J. T. O'CONNOR (of Montreal): We know we are paying for the packages anyhow, and we know we are not getting any premiums with the order. If we were up against some combines as they had in our days in the West we might have some reason to fight about this thing, but we buy in an open market, we get quotations from Maritime people and Lake peo-

ple and other firms, and if one firm is charging for the package and another is not charging, we have to figure it out—we know the price of the package is going to come in somewhere, I feel sure we have to pay for it, and we might as well know it is there.

But my view is that if we are going to pay the full amount of the cost of the packages, why cannot we be allowed to give our views as to the size of the box we want; why insist on giving us 300-lb. boxes when we want 100-lb. packages, and are willing to pay for them. The American firm had their choice in buying from Mr. Short. In getting a carload of frozen fish sometimes, it is all-important for us to get 100-lb. boxes, but we can rarely get them—we get the box that suits the shipper.

Mr. BYRNE: Because he was not charging specifically for the package. You will have that privilege if you are paying for the package.

QUESTION: Under the present system they ship in any package they find convenient.

(A Producer: We don't care what we pack the fish in, but it is a matter of expense. If we quote 6c and a certain package and the man comes back and says he wants a different package, the whole thing is upset. But if we charge for the package, we will suit the customer.)

Mr. BYRNE: The 200-lb. package will cost more proportionately than the 300-lb., and that is the reason why the dealers adopted the 300-lb. packages as uniform when no other arrangement was made. The express companies recently tried to insist on a smaller package. One reason why the 300-lb. package has become more uniform is because fish come in to the producing point during the afternoon and evening and are packed as quickly as possible when the market is short and the orders need to be got ready in a hurry. But if the producers were compelled to use a smaller package when shipping by express than the regular package which is used for shipment by freight, you would find an absolutely different package if your order were changed from freight to express. That 300-lb. package would hold 350-lbs. of fish with sufficient ice to carry it in good condition to the inland point in weather such as we have in October and November, but during the months from May to September it cannot hold more than 300 lbs., and you understand that the balance of the space in the case in the warmer months has to be used for crushed ice.

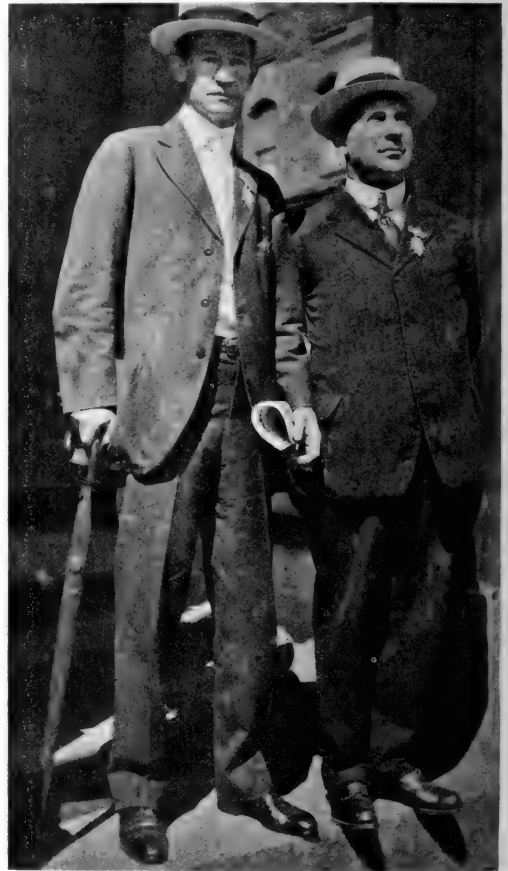
If the dealers want a smaller case and will stipulate their wants sufficiently ahead of time to permit our getting the packages—because we must make contracts with the factories sometimes six months or even a year ahead in order to get our box requirements—we would be glad to accommodate them. We follow the usual rule, the 300-lb. standard will only contain 250 pounds of frozen fish because this kind of fish will not pack so closely, and this has been used as a standard. But if the trade insist on a smaller package, these can be provided, and if they know what they want they can have what they are paying for.

Mr. JAMES: There should be various-sized packages, even as low as fifty pounds. If the fish are all shipped in 300-lb. boxes it means an added cost in distribution, because we have to provide smaller packages for our shipments. But if we could ship out in the original package it would save this extra cost and would mean the distributor would have no loss in shrinkage. I think it would be a great help all round

to the distributors if they could buy in 50, 150, 200 and 300-lb. boxes as they wished. We handle a lot of 300-lb. boxes, but on the other hand a big percentage of our trade find these too large, and I think one very good size would be a 100-lb. box. If we had the fish boxed as we wanted it, it would save a lot of extra labor in re-packing, and perhaps we could even sell the fish cheaper than we do to-day, as it costs us a lot of money to re-pack the large boxes.

Mr. BYRNE: Fresh fish would not pack in smaller boxes to so much advantage.

Mr. JAMES: They used to ship fish in 1500-lb. packages from the Lakes, but they reverted to boxes. The idea then was that they would carry better in those big packages, which were double, more like a small refrigerator, with air cells around them. But to-day



R. E. COKER,
U. S. Bureau of Fisheries.

S. L. SQUIRE,
Ontario Department of Fisheries.

people would never go back to the large packages.

Mr. BYRNE: If you will remember, I think you will agree that the reason for discontinuing these was because the express companies would not carry them.

Mr. JAMES: It had nothing to do with them then, the dealers were the first ones who wanted the boxes instead of the cars.

Mr. BYRNE: We were notified by the express company that they would not carry these unwieldy cars any longer.

Mr. H. B. SHORT: I think the contention that Mr. James is making is an excellent one. I really believe that if we adopted these standards of 50, 100, 150 and 200-lb. boxes, it would have a tendency to increase the sale of fish, the fellow that could not handle 300-lb. boxes could take 100 or 150-lb. It would have the same effect, I believe, in the fresh fish business that the small boxes had when introduced in the haddie trade. When haddies were packed in 50 and 100-lb. boxes only a few men handled them; when they got down to using 30 and 50-lb. and cut the 100-lb. box out there was not a very greatly increased demand; but when they adopted the 15-lb. box, every small grocer all over the country got to handling haddies. This is just a suggestion of mine; it occurs to me that if the small fellow could get the fresh fish in the original package it might have the same effect on the trade as the 15 lb. boxes of haddies had on the haddie trade.

Mr. BYRNE: There is some difference, Mr. Short. The haddie box is packed and shipped and redistributed in exactly the condition in which it leaves the producer. But if we packed the fresh fish in such a small box there would be a larger proportion of wood touching the fish and it would need to be opened for re-icing.

Mr. JAMES: The bulk of our trade for re-shipment is not 300-lb. packages, the grocer generally wants 50, 75 and 100-lb. boxes. The more we can get down to this original package idea the better.

Mr. BYRNE: I disagree with the view put forward with regard to 50-lb. packages. It has not been found necessary in the Lake fisheries, and I leave it to these gentlemen interested in shipping large quantities and sending them out to various centres whether it would be wise to go below the 100-lb. standard. If you go below that you are going to increase the cost to the dealer because the package cost would be considerably greater, and I do not see any good reason for doing it—in fact, I see many reasons against it. You would have to use more ice or fish would reach the interior point in poorer condition because of the fact that the fish would be more exposed to the lumber in the box and it is always important that the fish should be kept from touching this as much as possible. I think if you adopt lower standards you would do well to consider before going below the 100-lb. box.

Mr. JAMES: Don't you get business where the man wants 50-lbs. of one kind of fish? The best selling box in Toronto is the 50-lb. box. We buy this size in preference to any other package.

QUESTION: It does not apply to cod and haddock.

Mr. JAMES: That is frozen fish, I had reference to fresh fish,—any man can buy 100 pounds of frozen fish.

THE CHAIRMAN: The fish coming next to the box, the frozen fish, touching the box does not interfere with the quality. But I think there is a minimum in the packing of fresh fish and I believe with Mr. Byrne that 100-lb. boxes are the minimum.

Mr. SHORT: You could not get the 50-lb boxes for the same price you get the 100-lb. boxes.

THE CHAIRMAN: There is a difference of 5c.

Mr. BROWN (of Kingsville): You will find that if you use the 100-lb. standard box your fish will reach its destination in better condition than in a 300-lb.

box. The 300-lb. boxes have no handles on them, and you have got to have a crow-bar to get them loose from the floor of the car, takes three or four men to handle them. The 100-lb. boxes have a handle, so that they must pile these boxes one on the other, and they cannot fall down, and the ice stays where you put it. But with the 300-lb. box the ice will run down and melt and allow the top end of the fish to become exposed to the open air; so that the 100-lb. boxes will hold the ice in its original position far better than the 300-lb. boxes will. Then again, the 100-lb. is another box that you can re-sell. It is made with a seam down the centre, and you can cut it in two and make two boxes to take care of 50-lb. orders.

Mr. WALLACE: On the Pacific coast the most successful innovation was the introduction of the 50-lb. box, a lot of the dealers who could not handle 200-lbs. could easily handle the 50-lbs. This was frozen fish, of course, but at the same time I think it could be applied to both frozen and fresh fish. The 50-lb. boxes are perhaps too small for fresh fish, but 100 lbs. would certainly be a good innovation.

Mr. BYRNE: I should like to get the viewpoint of some of the retailers as to whether they consider that the 300-lb. boxes would carry the fish long distances—as from the Atlantic to interior points—as well as the smaller package.

Mr. BOWMAN: When shipping to New York I must frankly admit that we find the 150-lb. box superior to the 100-lbs., because it contains more ice, and of course the greater amount of ice the package contains the safer you make it that the fish will reach their destination in good condition.

Mr. O'CONNOR: While I admit that the introduction of the small boxes would create a demand amongst the small towns, yet from my point of view I do not think they would be advisable because they would not stand the long haul as well as the larger packages, where there is naturally more space for ice; in these small packages the four sides—in fact nearly all of the fish—would be touching the wood.

Mr. JAMES: It is seldom we get any complaint of deterioration in transit.

THE CHAIRMAN: If you had fish packed in 50-pound boxes and a few days on the way to Toronto, you would have to get the health team to take them away as soon as they arrived.

Mr. BOWMAN: I move that we adjourn this discussion, it has now been fully thrashed out from all different points of view.

Mr. BINNS: Before adjourning I think we should have an expression of opinion. We all want to do the right thing and the best thing for the whole of the fish industry. I do not care whether I get 50 or 300-lb. boxes as long as I get the stuff there in good condition. The smaller packages are certainly more convenient to handle, if you have 300-lb. packages you require heavy men to handle them, if you have 150-lb. boxes, why any boy almost can take care of them—up our way.

Mr. BYRNE: What is your impression of the condition the fish would arrive in the smaller package?

Mr. BINNS: It would arrive better, that is, Atlantic fish, in the 300-lb. boxes, but as far as shipping it out and handling it is concerned, why, the 100-lb. boxes would seem to me to be a splendid innovation.

Mr. JAMES: Some shipments of 300-lb. boxes that we get have stood on their ends from Mulgrave to To-

ronto. We have to take the order in and they stand all day in the warehouse, and after about 48 hours there is not a bit of ice left, the ice has all shifted down to the bottom of the box.

Mr. BYRNE: It is a transportation difficulty, the companies insist that these boxes be carried flat in the cars.

Mr. BROWN: Stick your handles out and then they can't do it.

Mr. A. E. CREWE (of Merlin, Ont.): My experience has been that it would be a mistake to ship anything under 100-lb. boxes to the trade in regard to the icing alone. You would need the quantity of ice for 50-lbs. that you have for 100 lbs., in order to make it carry safely.

THE CHAIRMAN: What size box do you use?

Mr. CREWE: The size I use, the body of the box outside would be 32 by 18 by 10, with projecting handles of say 3 inches on each end. I think it is a model box for Lake shipping. Larger fish possibly would need a little larger package. The handle is part of the box, part of the side of the box, and I advise by all means if you can get the lumber wide enough making the side of the box one piece.

Mr. BOUTILIER: Some three or four years ago we adopted a box to hold 150 to 200 lbs., with the ends projecting as described, and I think it has worked out very well, although there are some points where it is not convenient to use it in shipping. For instance, at Canso, we ship on steamers to the train, and it would not be so convenient as the larger box there, but we have found it very convenient indeed in shipping from here, and I think it has been very satisfactory to the trade.

Mr. BRITAIN: There is no doubt that a standard package is the ideal method of carrying on the fresh fish business from the east, and perhaps frozen fish when possible. A standard package of 200 lbs. weight might be worked out which would give very good satisfaction to the trade in general; it might mean a little extra cost but, as we have been saying, these costs are all absorbed in the quotation. I feel that the standard package will eventually come — although some time ago I was very much adverse to changing the size of the package that we made. The Food Controller, however, got me in the corner of the room one day and spent about fifteen minutes talking to me on the subject, and he was so big and heavy that he finally convinced me that perhaps a standard package would be the ideal one.

There are a great many people who buy a large box and destroy the package, having no further use for it, and yet at the same time the wholesale distributors buy a lot of packages of other kinds to re-ship the goods in—that is a waste. We must get together in some way and get a package that can be used for re-shipping Lake fish and other fish out from the distributing centre. The question of the small package of 100 pounds perhaps is an interesting one, but it hardly seems feasible at the present time. With the transportation facilities at present available it does not seem possible, but when we get our transportation difficulties fixed up I think there will be wonders produced as regards the shipment of the sea fish from the Atlantic sea board.

Another point in connection with this small package is that there is a great deal of fish produced on the Atlantic coast in outlying centres away from the rail-

roads and the goods have to be transported by steamer to the railway centre, slung down into the hold of a boat and out again into the car. You must have a strong package for that kind of work; the frail package used on the Lakes would be no good.

Perhaps a smaller package of about 150 pounds could be worked out as the standard, and if they wanted a smaller package than that the charge could be made accordingly; but get the standard package of 150-200 lbs. and then if you want 25 or 50-lbs. for some of your trade they can be supplied. It will all come, I believe, when we get the transportation.

Mr. JAMES: It seems to me that you gentlemen on the Atlantic here want to do things in the same way as you always have done, instead of considering the man who is selling the goods at the other end. You take a man in England who is manufacturing some line of goods and sending them out to Canada. If he finds it is not suitable to us here he very often goes to the expense of sending out a man to investigate and find out what the people want in this particular part of the world.

THE CHAIRMAN: In rebuttal; it is not that we are not anxious to please the distributor and the retailer in every possible way, but we want to discuss the matter and try to get their viewpoint. You have to take into consideration the fact that we have not got the ideal conditions for transportation and handling that we would like; if we had, there would be no difficulties at all, you could have 5-lb. boxes if you wanted them. But it is a physical impossibility at present to send less than 100-lb. boxes from Mulgrave to Toronto under present transportation facilities and be sure that they would arrive in anything like good condition, and it would not be in the interests of the industry to put up packages smaller than this and have the goods arriving in bad condition. We want these fresh fish to get there in the best possible condition, we want both the viewpoints of the distributor and retailer, we want you to consider the conditions under which we have got to handle them; and from a practical experience covering a great many years you will find the consensus of opinion is that for shipments to Montreal and Toronto the smallest practical package is the 200-lb. one. If we get cold storage and iced cars then we can put up in packages of any size, but with the conditions prevailing today I do not think it is possible to get fresh fish from Mulgrave to Toronto in packages under 200 lbs.

Mr. BYRNE: Owing to the methods of transportation from points like Canso and from outlying points to the railway assembling points, there is the absolute necessity for packing in strong, well-made boxes. If the 200-lb. is adopted as a standard these dealers who are going to have to pay for the packages will find that the 200-lbs. will cost them practically as much as the 300-lbs.; that will be a cost to them and they had better understand and realize that. Just as the 15-lb. haddie box costs almost the same as the 30-lb. box, the difference being so slight that it is negligible, so in these 200-lb. and 300-lb. packages, the 200-lb. is going to cost practically as much as the 300-lb., it will have to be made as strong as the 300-lb. one so that it will stand being put into the hold of a steamer and slung up again into the car.

Mr. CORNELL: I do not think you can use too much care in getting your fish to the market in first-class condition, but I do not quite understand the argu-

ment that a 300-lb. box carries fresh fish in better condition than a 100-lb. box. One of the very best shippers that we have on Lake Erie is Mr. Bates, he has a reputation for his fish that no other shipper on that shore has obtained, and fish landing in New York with his brand on the box always command a good price. He has a different box for summer shipping than the one he uses for early spring and fall, the summer box is higher, it contains exactly the same number of cubic inches, but it is a little higher. He puts ice in the bottom and packs the fish thinner, his object being not to have too many fish together, not too great a body of fish, and then he puts a lot of ice on top, and the ice melting and the cool water sapping down through the fish keeps them in good condition. That is his contention. Of course, he has the additional advantage of being right by a marsh, and he cuts this marshy hay and puts it on top, which is a considerable advantage. In the summer time when we are shipping fresh fish out to distant points we line our boxes with paper; this makes them more air-tight and we find it a very great saving and help in preserving the quality of the fish.

QUESTION: What is the weight of the box used by Bates?

Mr. CORNELL: Well, we use pine, and they use hardwood, and our pine boxes are about 40 pounds. There is 200 lbs. weight altogether in a box, that is what the express companies charge us for, the total weight of box, fish and ice.

Of course, our boxes would not live a minute under the method of handling which you have described, I know that. But I think that in the interests of getting your fish to the retail dealer in proper condition you should insist on some better way of loading and unloading those fish into the vessels. Under the old-fashioned way that used to prevail of packing our fish in barrels, before we introduced boxes, there would not be a scale left on the fish when it got to New York, they looked as if they had come through a blizzard; but with these improved boxes with handles and the fish resting on the proper bottom and the ice continually melting and sapping down through the fish, the box is very attractive when opened. This is especially important on the New York market, where every box of fish is sold from the appearance it makes.

Mr. H. B. SHORT: I think, gentlemen, that the packages have a good deal to do with the goods. If you make your packages more attractive you are going to sell more fish. Our method of packing fresh fish has been very crude, they are often put up in boxes not even planed, and today in many cases you can buy planed lumber pretty nearly as cheap as you can the other. Our packages are certainly most unattractive. If we got up a nice neat package, smaller perhaps than the box gotten up last year by the producers, it would make a great difference in the distribution of the fish, and the people would take hold of it more than in the past. However, we certainly have got to get down to a standard. Take the export business in salt fish, we have got to give each place the kind of package they want; if we ship dry fish to Havana we have got to give them 128-lb. drums and cod fish in 100-lb. boxes; but if we are shipping to South America we have got to give them codfish in 128-lb. boxes, and they will not take the drums. We have to give them what they want, and they won't buy

their fish in any other kind of package than the one they specify.

Perhaps the 50-lb. package is a little too small, but we certainly ought to have 100-lb. and 150-lb. and 200-lb. packages, and I believe that if we adopted these you would be surprised at the increase in shipments all over the country—we would reach towns that never use a bit of fresh fish at the present time. (Hear, hear.)

THE CHAIRMAN: Now, gentlemen, we cannot very well prolong this discussion further. I suggest that a committee be nominated to give this matter further consideration and report to the Executive and that their decision in the matter, after being dealt with by the Executive of the Association, be given thirty or sixty days' notice by being inserted in the "Canadian Fisherman."

MOVED AND SECONDED that the matter of the standardization of packages together with the costs on the Atlantic sea board be handed over to a special committee for report.

The following papers, prepared by Mr. H. F. Robinson, of Canso, N.S.; Mr. Gardner Poole, of Washington, D.C.; and Dr. E. E. Prince, of Ottawa, were taken as read, and ordered to be printed with the proceedings:

STEAM-TRAWLING

By H. F. ROBINSON, of Canso.

Notwithstanding the extreme prejudice with which the first endeavours to introduce the use of the steam trawler as a means of increasing the production of sea-foods in Canada and the United States was met with on the part of the owners and operators of sailing boats and schooners, it is a recognized fact today that the steam trawler is here to stay.

There are several of these fine ships of the most approved and up-to-date type operating out of Canadian ports now, and a good-sized and fast-growing fleet is owned and operated from the principal fishing ports of United States.

All progressive concerns in the fish business are interested in the subject of steam trawlers and are doing everything in their power to secure by purchasing, building or chartering this class of vessel for the production of their supplies. There is no doubt in the minds of the producers today that steam trawling is the proper method of procuring a steady and reliable supply of fish.

However, the steam trawler is not, as many people who have not been through the mill of hard-earned experience, believe, a fortune making machine, but when judiciously handled they will pay fair returns on the investment.

The operating expenses of a modern steam trawler are enormous as compared with the cost of operating a sailing schooner for line fishing. The investment in the ship and equipment amounts to about five times as much as that of the old-time sailing schooner, and therefore with the heavy investment and expenses, in order to make the least financial success the steamer trawlers' production must be many times greater than that of the line-fishing schooner.

The bitter prejudice which existed against the steam trawler some six or seven years ago both in Canada and United States has been over-come to a very large extent, and many of those who cried most bitterly against this method of fishing at the beginning are now either

in the steam trawling business or are trying very hard to get into it.

The great redeeming feature of the steam trawler to the fish producers is felt most perceptibly by those engaged in the production and sale of fresh fish, as in the fresh fish business a steady and reliable supply is very essential.

Our most efficient Food Board is putting forth a lot of effort to increase the sale of fish, and their endeavours to educate the consuming public as to the value of sea fish as food have met with a very marked success. Their most excellent work must be backed up by the producers and distributors, and in order to do this they must have a steady and reliable supply. The steam trawler is just the answer to this problem.

In the days when we had to depend on the shore boats and schooners entirely there were seasons when they landed nothing for weeks, and there was nothing but uncertainty as to what we could offer the distributor and when we could offer. The schooner would leave port with ice and bait on board and perhaps the weather would be stormy. She would lay around some harbour or jog around the ocean waiting for a change to set their lines. Perhaps before that change came her bait was spoiled. Then she would have to spend days and perhaps weeks looking for new bait which would have to be secured before any fishing could be done. After much delay we will say she gets her bait and has a few sets and then starts for home.

This kind of trip often consume four, six and sometimes even eight weeks or more, and the vessel comes home with anywhere from twenty to one hundred pounds of fish and probably arrives on some day of the week that does not suit the market conditions and it is almost impossible to sell any fresh fish. Again probably many of the fish are too old to be sold to the fresh market and have to be salted at once.

This is not so with the steam trawler. When she leaves the wharf her Manager knows when the market wants her catch. He tells her Captain when to come in and is just as sure that the ship will arrive within a few hours of the appointed time as he is that the sun will come up on that day. In fact he is so sure that he can tell the distributor just when he is going to have some fresh fish to ship him, and it is always there when the consumer wants it. These trips seldom last over about a week which brings the fish in in good marketable condition. The catch for this period amounts to from 150,000 pounds according to conditions.

Another thing to consider in favour of the steam trawler is the reduction of the hazard of life to the fishermen to a minimum. Few people who are not directly connected with the operation of vessels realize what it means to go over the side of a vessel, in the wintertime, into a frail dory, in which 2 men row boldly away from their vessel to set the lines which gather in the finny treasures from the deep with the temperature sometimes around zero mark, with the fog likely to set in at any minute and shut them out of view from the vessel, and with the liability of a breeze of wind starting up at any minute, which means if the dory is a little overloaded, which she is likely to be if the fishing is good, that only the skill of these hardy men with the oars can save them from swamping. At the best they know there is only the boards about one inch thick on the bottom of the dory between them and fifty to seventy fathoms of cold water. You can see from this that the old method of line fishing, from dories, is no child's

play. Many times these dories get astray in the fog and the vessel cannot locate them and after days of exposure they may be picked up by some ship, with the men half dead. In some cases they row hundreds of miles to land where they arrive usually more dead than alive.

This is where the great advantage of the steam trawler comes in again. All the work is done on the deck of the ship. The work is hard and the hours are long, but the fisherman is always comforted by the knowledge of a good substantial meal, and a steaming mug of tea or coffee, as he prefers, and a warm bunk in the fore-castle is waiting for him, when he comes off watch.

As to the remuneration these hardy trawler men receive for their work, it all depends upon the amount of fish they land. When the ship is landing good catches and making good returns to the owners the crew share in the good fortune, and when the fish are scarce and trips small the crew have to share these conditions also. But it is sufficient to say that the average year's work of a steam trawler fisherman runs into an amount in dollars and cents fully to encourage him for the hardship he endures. Their food and living is the best that money can buy. But make no mistake. These hardy, good-natured sea-dogs earn every cent they get.

There is no need of going into details about the important part that steam trawlers, which were commanded by the British Government at the outbreak of the war and used as mine-sweepers and patrols, have played. The drudgery and deeds of daring that have been performed by these steam trawling crews, who have had severe training in the perils of the sea in these same sturdy little ships, will go down in history as accomplishments that no other class of sea-men could hope to achieve. There is no doubt that this most important section of the British Navy has been greatly responsible for the British being able to keep the North Sea open for the most essential traffic.

The indications at present are that before many years there will be a fleet of steam trawlers fishing on the Atlantic Ocean and landing their catches of most wholesome food in Canadian ports. The growth cannot come over night, but must be slow and healthy, but before this the demand must be created and the public learn to realize the advantage of Fish as Food. With the fast-growing country and increasing population which we expect in Canada after this war is over, the market for fresh fish should increase steadily, and there is no doubt that the steam trawlers will be forthcoming in numbers suitable to supply the greatly increased demand for fresh fish.

It is hoped that there will never be another great world-war the same as is raging now, but if one should come to pass in future it is very probable that Canada will have a fleet of steam trawlers with trained Naval Seamen to fall back on, which will play as important a part of the conflict as the British steam trawlers are doing today.

FISH CONSUMPTION IN CANADIAN MILITARY CAMPS.

In the ten military districts of Canada, two hundred thousand pounds of beef were saved in the month of May, and about the same in the month of June, by the substitution of fish. The result of conservation in the military camps is interesting as an example of the usefulness of observing the food regulations.

REFRIGERATION AS APPLIED TO THE FISHERIES.

GARDNER POOLE,

Commonwealth Cold Storage, Boston, & Fish Division,
U. S. Food Administration.

The fish production of any country is largely a seasonal crop, subject to very large fluctuations in the yearly yield, and in greater measure than our land crops is dependent upon natural factors beyond the control of man.

The catches of fish are governed by climatic changes, water temperatures, feed conditions, and other factors, all of which naturally control the volume of production and fundamentally bring about extremely variable and unstable conditions.

While the stocks of flesh foods available upon the land are in sight and under control, the actual supplies of food fish afloat in the broad pastures of the ocean, are in no sense available to meet consuming demands until actually reduced to possession by the fishermen.

During certain seasons fish are produced in quantities far in excess of immediate needs, and the ordinary channels of trade being blocked, the product is dammed back and must be diverted to other channels to be conserved, and without methods of effective conservation these vast temporary surpluses would go to waste.

Before the method of cold storage was known large quantities of fish were saved, as they still are, by canning, salting, pickling and smoking.

The most effective method, however, in modern times is by freezing and storage as the process does not alter the flavor or appearance of the fish and therefore makes available in and out of season, fish in almost a natural condition.

Large fish freezing plants located at many points in Canada and the United States now constitute an important industry and are becoming more and more important as sources of nitrogenous food, to make up the deficiencies in the meat supply. Their function is certainly true food conservation.

The large crops of fish, unlike the land crops, add to, rather than take from the fertility of our soils.

Meat represents the conversions by animals, of grain or other foodstuffs into another form of food.

Fish, however, represents the conversion of aquatic vegetation or animal material into human food and are had for the labor and expense of harvesting. They are, therefore, a net gain in the food supply.

The freezing of fish and the storing in proper temperatures causes no appreciable chemical change in those constituents upon which the food values are usually calculated, even when carried for longer periods than are necessary in commercial practice.

Tests have been made by the U. S. Bureau of Chemistry on frozen fish held for excessively long periods under its control, sample lots of fish being withdrawn and analyzed at different times.

These tests showed no significant difference in composition between the frozen fish and samples of fresh of the same variety and no loss of food value was noted.

When fish are properly frozen, glazed and held at proper temperatures for reasonable periods, no lessening of food value or palatability can be noticeable to the consumer.

This is bound to be true as the process of freezing takes nothing from the product and adds nothing to it, except the glaze of ice which only serves to seal it

from the air and prevent an injurious action by any change of temperatures.

It is true that some of the varieties of fish are not as firm when thawed out as when taken from the water but this is due largely to the fact that in some fish the muscle cells of the body contain large percentages of liquid and readily burst by expansion in the process of freezing.

Too little publicity is given to the wholesomeness of cold storage products and to the benefits of modern cold storage plants themselves and their effect on the ordinary three meals a day.

It might not be out of reason to state that the very winning of this war to a large extent depends upon the facilities of cold storage both ashore and afloat.

We find that a very marked prejudice exists in the minds of a large number of consumers against frozen fish, in fact, there are at least two erroneous beliefs. One is that cold storage food is more or less bad food and the other that cold storage plants are used for the only purpose of increasing the fish man's unholy profits.

It is certainly imperative that we must place the real facts before the purchasing public, in order that they may appreciate the real value of cold storage and its importance in the equitable distribution of foods, especially as the underlying cause for their suspicions and prejudices is complete ignorance as to the facts that cold storage as we know it is a necessary outgrowth of the changed conditions under which we now live.

They do not realize that cold storage makes varieties of fish available in the various distributing centres, that could not be had at all.

It makes the product more staple and standardizes prices. Its effect is certainly to lower the level of prices and during the periods of scant production, has a marked effect on prices of the fresh product.

It solves transportation troubles to a large extent and makes it possible to ship fish in refrigerator cars to distant points with the danger of decay reduced to a minimum.

The time is now ripe for the right kind of a publicity campaign by which we can emphasize the need and value of cold storage.

It was my privilege last winter to do some lecture and demonstration work in the interests of a larger use of cold storage fish, particularly those varieties little known to the buying public and I was amazed at the meager knowledge of most of the audiences.

All sorts of questions were put to the speakers and the people were very eager for a true knowledge of frozen fish.

In a very small way we held exhibitions and demonstrations in cooking, gave the people a knowledge and a taste of a wholesome product which in some cases was not known to exist and in others was until then looked upon with suspicion.

Some retailers show the same prejudice and will not handle frozen fish at all. Others do handle them but thaw them out and in many cases sell as fresh products and this does more injury to the frozen fish industry than any other one thing as the fish is often kept on the stands until it becomes soft and unattractive and is looked upon with disfavor by the purchaser.

When frozen fish are thawed, they are as perishable as fresh fish and should be consumed as soon as possible.

Retailers should make every effort to keep fish frozen.

en up to the time they are sold and the housewife should insist on purchasing the fish in this condition if possible and thaw it out gradually just before using, on ice preferably, in order to retain the essential flavors and make it palatable.

We have a great work ahead, in some way the consumer must be shown the value and modern need of cold storage.

THE FISHERIES OF THE INLAND WATERS OF CANADA.

By Professor EDWARD E. PRINCE, LL.D., F.R.S.C.,
etc., Dominion Commissioner of Fisheries,
Ottawa.

It may appear like rank heresy here in Halifax, the metropolis of the Maritime fishing industries of the Dominion, to pronounce the fish and fisheries of our interior waters highly important and valuable. When, however, we have regard to the fact that the inland lakes and rivers of the Dominion are the home of the finest species of food and game fishes, chiefly of the salmon and trout family, it will be seen that our fresh water fishes must take a high place, and that the species caught commercially are of unexcelled food value.

Salmon Family Prominent in Interior Fisheries.

Though the cod, haddock, mackerel, halibut, herring, lobsters and other food fishes stand in the front rank, the interior waters of the Dominion produce fish which cannot be excelled, and no country in the world can compete with Canada in the widespread abundance and variety of species of "Salmonidae."

Few Species Commercially Utilized.

Over one hundred and fifty (150) species of fresh water fishes have been determined as inhabitants of our interior waters, but of these only about twenty (20), or less than one-seventh, are of commercial importance in the fish markets. These include five species of salmon, three species of whitefish, five species of lake herring or lesser whitefish, three species of trout, and the valuable pike-perch or pickerel, with various kinds of catfish, bass, and pike and other kinds.

Carp and Other Fisheries Can Be Developed.

Quite a considerable number of these fish, at present not utilized, could be added to the list of fresh water food fishes and, indeed, some that have been neglected, and even despised, such as the German carp, fresh water ling, white and yellow perch, Buffalo fish, and other species, are now being made use of for market purposes. Even the detested bowfin, or great lake dogfish, is being declared by some United States authorities quite acceptable on the table.

Area of Inland Waters.

Of the total area of Canada, 3,729,665 square miles, no less than 220,000 square miles are covered by the great lakes and rivers, so that at least one square mile is water for every thirty (30) square miles of land. The innumerable small lakes, which are scattered over almost all the nine provinces and the northern territories have been little utilized commercially, but were they extensively turned to account the production of fresh water fish could be vastly increased. At present these are only fished for sport and limited local needs, so that the lake and river areas, which are at present utilized for commercial purposes, may be extended to about 126,000 square miles. In the north west regions,

north of the 60th parallel of north latitude, there are nearly 35,000 square miles of lake areas available, including Great Slave, Great Bear and other vast lakes, but amongst the Provinces Ontario ranks first with 41,382 square miles of lakes, Manitoba next with about half that area of lakes, namely 20,000 square miles, Quebec with 16,000 square miles, Saskatchewan with 8,000, British Columbia with 2,500 square miles, Alberta with 2360 square miles, the Yukon with 649 square miles, Nova Scotia with 360 square miles and New Brunswick with 74 square miles.

Value of Interior Fisheries.

According to latest returns (1916-17) the value of the fresh water fisheries is as follows, in round numbers:—

Ontario	\$2,700,000
Manitoba	1,390,000
Quebec	300,000
Saskatchewan	230,000
Alberta	150,000
Yukon	60,000

Thus the total fresh water fisheries amount to about \$5,000,000 per annum, or about the same as the cod or lobster fisheries, or the halibut and herring fisheries combined.

Number of Fishermen, Amount and Kinds of Gear, etc.

It is estimated that about 10,000 fishermen engage in these interior fisheries, using about 125 steam tugs, over 5,000 sail and gasoline boats, and the fishing gear, fish houses, etc. are valued about \$2,000,000. While the fresh water fisheries employ only about one-tenth of the number of vessels and men engaging in the sea fisheries, yet their numbers are sufficiently considerable to justify the claim that the interior fisheries are of high importance amongst our national industries in the production of food. The kinds of gear used in the interior fisheries are mainly gill-nets, and pound nets, or large traps, but drag seines, hook or fyke nets, baited hooks and other devices are also employed in these fisheries. It may be stated that, in such areas as Georgian Bay, the amount of gill nets used by tugs and boats, according to the Georgian Bay Fisheries Commission, 1908, was no less than 4,600,000 yards or 2,556 miles.

United States Shares Most of Boundary Lakes, Etc.

It must not be forgotten that on the Great Lakes, Lake of the Woods and other waters, the United States possesses a considerable part of the fishing areas, and that the Canadian statistics do not indicate the real extent of the fishing in these waters. The United States fishermen not only use vastly greater amounts of gear in most cases, but also are permitted to use kinds which are forbidden in Canada, especially the submerged trap-net of which very large numbers have always been used in United States portions of the Great Lakes.

General Progress Marks Inland Fisheries.

Many authorities have prophesied that areas so limited as even the Great Lakes, compared with the vast marine fishing grounds, must give out and become entirely depleted, even though the utmost care be exercised in preventing gross abuses, and such persons have long prophesied that commercial fishing would come to an end in the interior waters, after a period of years of extensive exploitation. The facts and figures which our Canadian fisheries afford do not support this view. Of course, wise regulations, including license restrictions, limitation of gear, mesh of nets, close seasons, etc., must have had a beneficial effect and

counterbalanced the drain due to commercial fishing, but fresh water fish are very prolific, and Nature has provided that the finn tribes produce progeny far in excess of all destruction or death. This protection more than suffices to keep up a permanent supply of fish.

Hatcheries and Regulations Warded off Depletion.

I have always laid stress, during my many years work as Commissioner of Fisheries, on the policy constantly pursued by Canada since Confederation, namely, the combination of wise fishery regulations, based on trained scientific conclusions, and artificial fish-propagation by hatcheries. Accurate, educated, technical knowledge can alone furnish a basis for reliable laws in the fishing industries, as has proved to be the case in farming, mining, and other industries. Amateur, untrained information must do harm in the long run, as many industries have found to their cost. Wise laws and fish hatching must go hand-in-hand, if our interior fisheries are to be maintained. Fish hatcheries are of inferior importance in the marine fisheries, because, while the parent fish in fresh water produce annually eggs and fry by tens of thousands, the most important fish in the sea produce young annually by millions. A salmon or whitefish may produce five thousand to fifteen thousand eggs each season, but a cod or halibut may produce some five to ten million of eggs.

Increased Catches of Certain Species.

Various authorities in the United States have made elaborate investigations to decide whether hatcheries were beneficial, and one of these authorities five or six years ago, when asked if hatcheries do any good, said "My reply has always been, 'Certainly; I believe fish hatcheries have been beneficial,'" and this authority wrote a paper, read by the American Fisheries Society in 1912, pointing out that the catches of whitefish, lake herring, pickerel or pike-perch, had increased three-

fold in recent years in the State of Pennsylvania alone. Of course the fishing industries fluctuate from season to season, owing to various complex causes of weather, storms, disease and death amongst fish, and other causes, but this all overcomes in a period of years. A study of the Canadian returns for our Great Lake fisheries during the last twenty or thirty years proves that there has been a general advance and improvement; an advance and improvement in the catches and the money returns. It would be wearisome, at this place, to deal with these dry statistics in detail, but I offer figures covering a period of twenty years, and I have selected years separated by decades, namely, 1896, 1906 and 1916.

From this very brief survey of our interior fisheries, it will be apparent that they are an important and reliable source of supply, for they include some of the most important fish used for food, especially the salmonidae, which includes salmon, trout, whitefish, lake herring, etc., and the percide which includes the valuable pike-perch or blue and yellow pickerel, sometimes called wall-eyed pike.

Vast Interior Waters Await For Exploitation.

There are some areas in the interior which still await exploitation, not only in small lakes numbering tens of thousands in the older provinces, but vast areas in the extreme north-west like the Great Slave, Great Bear and other lakes which abound in whitefish and lake trout of large sizes and of superior quality. It is imperative that these unutilized areas should be turned to account, and that all the species of fish, such as those already mentioned, not now used for food to any extent should be introduced into the markets, and presented in attractive form (cleaned, etc.), and if these steps be taken, the fresh-water fishes of Canada will be even a greater source of food and wealth in the future than in the past.

CATCHES OF IMPORTANT FRESH-WATER FISHES IN 1896, 1906, and 1916.

WEIGHT IN POUNDS AND VALUE.

	ONTARIO.			QUEBEC.			MANITOBA.			SASKATCHEWAN			ALBERTA.		
		Pounds.		Pounds.			Pounds.			Pounds.			Pounds.		
Lake Whitefish	1896	3,432,560	\$272,283	132,927	\$10,634		9,794,760	\$489,738		2,196,000	131,760		968,100	\$48,405	
	1906	2,927,650	290,155	59,510	5,951		9,300,100	609,685							
	1916	6,071,100	516,290	309,900	30,933		5,039,900	350,543		2,355,100	126,758		2,145,200	90,472	
Lake Trout	1896	5,975,661	597,566							155,000	9,300				
	1906	6,951,260	669,376							279,900	14,155		98,400	18,543	
	1916	7,811,600	638,888				125,900	8,813							
Lake Herring	1896	6,292,721	204,670												
	1906	4,280,500	214,025												
	1916	10,687,200	526,976												
Pickerel	1896	2,998,595	149,930	268,945	13,447	3,497,970	104,939								
Wall-eye or	1906	2,956,200	295,620	112,970	11,297	6,749,100	399,065			506,000	25,300		82,100	4,105	
Dore	1916	4,541,800	454,187	677,300	67,763	4,529,800	311,262			466,200	24,833		307,600	11,584	
Pike or	1896	1,101,050	44,042	169,695	8,485	2,324,045	46,481								
Jackfish	1906	1,950,200	78,008	111,200	5,560	3,564,100	121,048			602,000	18,090		136,100	4,083	
	1916	1,483,600	118,690	423,800	25,967	4,125,900	204,749			873,600	41,732		489,200	13,265	
Perch	1896	1,111,160	33,335	156,590	4,698	65,800	808								
	1906	754,700	22,642	148,900	7,445	89,000	3,115								
	1916	1,258,500	62,926	151,600	8,457	860,300	43,015								
Eels	1896	139,985	8,399	900,000	57,003										
	1906	20,100	1,206	784,510	47,071										
	1916	166,100	9,969	874,100	49,716										
Sturgeon	1896	1,590,135	110,130			267,748	13,387								
	1906	329,000	26,320			498,000	49,800			173,000	17,300				
	1916	147,500	22,129			181,900	20,506			8,700	870		1,500	125	
Codfish	1906	101,600	3,048	27,300	819	200,000	16,000								
	1916	542,700	43,417	288,000	24,141	108,500	6,510								
Carp	1916	1,857,800	37,187												

Yukon — Lake Whitefish — 78,900 lbs. — \$19,725.

Yukon — Lake Trout — 25,200 lbs. — \$7,560.

Speeches Delivered at the Banquet of the Halifax Convention of Canadian Fisheries Association

After the toast to the King was drunk, the Chairman, Mr. H. A. Brittain, called upon Mr. S. Y. Wilson to propose the toast of—

“THE ARMY, THE NAVY AND OUR ALLIES.”

Mr. Wilson spoke as follows:—

Mr. President and Gentlemen: It has fallen to my lot to propose the first toast of the evening, but before doing so I should like to congratulate the Association on having selected the present President (applause) and also to congratulate the present president on having been elected to this office in our Association.

The toast which I am asked to propose is that of “The Army, the Navy and Our Allies”, coupling with it the names of Lieutenant-Governor Grant and Consul-General Young. I believe it is a subject pretty close to the hearts of everybody here to-night, for there are not many of us who have not got some representative in either the army or the navy or with our allies.

I want in passing to mention particularly the debt we owe to our allies the French. No one reading the papers of the last six weeks could help admiring their great courage and unswerving attitude in the war. I should, perhaps, have mentioned first our neighbors the South. (Applause) I feel — and no doubt everybody else feels in the same way — that we owe to them a debt of gratitude for the position that they have taken at this particular time and in this particular stage of the war that we could not or would not have felt had they gone into it earlier or later.

I am not going to inflict my prosy talk on you further, gentlemen, but I would like you to join in drinking to the toast — “The Army, the Navy and our Allies.”

LIEUTENANT-GOVERNOR GRANT.—

Mr. Chairman, Brother Fishermen of Canada and of the United States: I do not know why I should be selected to speak for the Army, but as Mr. Wilson said they are very close to my heart as they are to yours. The nearest I have been to the army was a great many years ago when I was color sergeant in the old Hants County Militia, which was commanded by Major Laurie at that time. They told me one day that they were afraid I did not know my place, and this so affected my pride that I dropped the army for all time. (Laughter.) I do not know that we need to hear much about the army to-night; we hear about it day after day in the morning and evening papers, and our hearts are all united. I am quite sure, in universal love for our country. (Applause.)

I see here to-night representatives of that great country to the south of us. God knows what Great Britain and France and Belgium would have been like to-day if it had not been that the United States cast in their lot with us. I have also to say that my own heart was never more deeply touched than immediately after that sad occurrence that happened in Halifax last December. The news reached Boston as you know shortly afterwards, and the next day a train fitted out with supplies of all kinds and with surgeons and nurses

was sent to us and the relief they gave on arrival here will never be known this side of Eternity. My heart has so warmed up to that great country that I never see an American now without wanting to shake hands with him, and as for the ladies — well, the members of the fair sex I want to kiss (Laughter), and so say we all (hear, hear).

Gentlemen, I am not going to inflict a speech on you, although I want to thank Mr. President for giving me the pleasure of speaking. I sometimes think that that good old verse in the Bible that “It is easier for a camel to enter the Kingdom of Heaven” ought to have been changed to a fisherman, (laughter) although I don’t suppose it applies in your case. I never feel so inclined in my life to tell stories as after I have been on a fishing trip, I think it must run in our family.

Now gentlemen, let me thank you again for having given me the pleasure of speaking to you. I want to say to my American friends that old Government House—of which I am a tenant for a few years—is open to them at all times, and it gives me no greater pleasure to shake hands with some good old Yankee inside those doors than it would to welcome some of you gentlemen here to-night. I am sorry that you are most of you leaving to-morrow. I hope that you are pleased with your visit to Halifax this time and that you will come back next year, and if you do we can promise you a better welcome and a happier time if possible than we have given you this year. (Applause.)

CONSUL-GENERAL E. E. YOUNG.

Your Honor the Lieutenant-Governor, President Brittain, delegates to the Canadian Fisheries Association, and friends:

It was said some time ago that a banquet was an affair where the speakers did not particularly care for the dinner owing to the fact that they were apprehensive of what they were to say and the diners could not say such an awful lot for the speeches. To-night, however, those who had in charge the arrangement of a very pleasant banquet were so kind as to omit from the menu the usual programme of toasts and also so careless as not to notify any of the speakers that they were to be called upon. I am glad, however, Mr. President, of the opportunity afforded me to express my appreciation of your kindness in inviting me to meet you here to-night.

In endeavoring to respond to the toast with which my name has been so kindly coupled by Mr. Wilson, unfortunately I cannot tell you any stories: sad to relate, my stories are all fish stories, and to tell them to you would be far worse than carrying the proverbial coals to Newcastle. Addressing myself more particularly to the toast Mr. Wilson has proposed, it is hard for me to convey to you the pleasure which it affords me to be able to respond to that toast, to a toast of that nature. For some two, or slightly more, years while serving here as a consul-general for the United States, the position of my country — the republic to the South — was that of a neutral, and it was my duty officially during those long months and to me intolerable — in spite of the great kindness, courtesy and thoughtfulness

shown me by all of my Halifax friends who, I am proud to say, are limited only by the printed list of the directory, at least, that is the way I feel about you — during those days it was my official duty, I say, to be neutral in speech and conduct, but I could not be neutral in thought. (Loud applause).

Some day this long, tedious, terrible war will end, and of the ending who of us assembled here in this room to-night can doubt? With no attempt at bombast, it were as well, it seems to me, to doubt that the sun would rise again, or the stormy waves ere be still as it would for us to doubt the possible ending of this war. (Hear, hear). And when peace does come once again to a war-weary world, for such in these days we are, the sunshine that wreathes the tops of the hills will be a little brighter, the fragrance of the flowers a little sweeter, the music of the birds a little dearer, — because of the sacrifices of the stalwart manly men of Canada, France, Italy, England, and, I trust, my own brothers from the south. Of the awfulness of war we know full well, though many of us probably have felt but little of it yet. But through the darkened clouds which follow the wake of war, carrying hunger, famine and want to the world, can we not see with clearer vision what to me at least is a dear and beautiful picture — the ever drawing closer and closer together of the members of the Anglo-Saxon race. (Loud applause).

TO OUR FISHING INDUSTRIES.

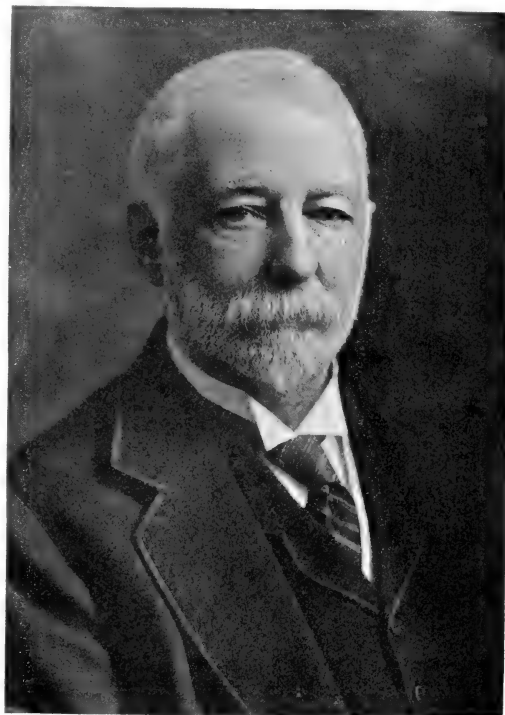
Proposed by J. A. Paulhus.

Mr. Chairman, Gentlemen: I have much pleasure in proposing this toast to our Fishing Industry and would associate with it the name of the Honorable W. S. Fielding, M.P., chairman of the Fisheries Committee of the House of Commons, who has shown such a deep interest in the fishing industry in attending most of our meetings, and also the names of Mr. G. J. Desbarats and Dr. MacCallum. As a member of the association I feel much encouraged by the progress and development of the fishing industry for the past few years; in fact, when we look at the figures that have been published lately we discover that the industry for the last fiscal year has increased by 40% over the previous year. I think we have good reason to feel elated over that, especially when we think that it is due in a great part to the activities of our Association. We feel that we are able to still increase this development, because we know that we have a source at hand which is inexhaustible. We have been given to understand at this last Convention that we cannot depend very much on the Hudson Bay, and it has disappointed us very much; but there is still enough left in this country to say that we are safe to have hopes to not only treble, quadruple or even more than that in the future the development of the fishing industry. What encourages our hopes still more is the declaration of your interest to-night and the fact that we have secured Mr. Brittain for our president. He tells us that this year every one of us has to work, and I am sure that he will keep his word and see to it that we do: he is energetic, he has determination, and we can expect at our next annual meeting to have good things to report regarding the development of this great resource of ours. I would ask you to arise and drink with me to the fisheries.

HONORABLE W. S. FIELDING.—

Mr. Chairman, Your Honor, Gentlemen:

Let me first express my very sincere thanks to the officers of the Fisheries Association for having been kind enough to extend to me an invitation to participate in the very interesting meetings you have had, which are being brought to a close to-night by this very pleasant gathering. Let me also add my congratulations to those already tendered Mr. Brittain upon his election to his important office and also to the very energetic committee of management for the success which has attended your Convention. I have had an opportunity of attending a number of these meetings and must confess that I have been very deeply interested — I have found them not only interesting but highly instructive. Everybody living by the sea ought to be interested in the fisheries. I once got into trouble in Parliament by boasting that I represented more lob-



HON. W. S. FIELDING, M.P.,
Chairman, Fisheries Committee, House of Commons.

sters than any other man in the House, — somebody thought I had done an injustice to my constituents. (Laughter.) We who live by the seaside or come from the seaside have in a general way a knowledge of the great fisheries resources of our country and perhaps we think we know a good deal about them, and yet I am sure that the native Bluenose who has been brought in contact with the operations of the Fisheries Association, as exhibited in the papers read and the addresses delivered at your meetings, will discover that he has learned a good deal about his own country, that his knowledge of the fisheries has been broadened, his pride in the industry as a great national asset increased, and his zeal quickened by being brought in touch with the

splendid work that you are doing. (Hear, hear).

The fisheries are indeed a great national asset, and they are managed by a great Department at Ottawa. When you have a large industry to manage, where you have a Department which has to deal with a wide range of subjects and a Department dealing with subjects which have been so much matters of contention, it is inevitable that this Department will not be able to please everybody always, inevitable that there should be a measure of criticism and enquiry. Of that the officials of the Department will not complain; public discussion and enquiry and frank criticism are the very essence of democratic government; and I am sure that criticism of that nature is always welcomed; but of course it should at all times be blended with fair regard and consideration for the difficulties which are attendant upon the management of such a great Department under such circumstances. I have seen a good deal of the Fisheries Department from many points of view — have had an opportunity of observing it for many years, as a Cabinet Minister, and as a private citizen when I found occasion to be brought in to contact with the Department, and more recently from the angle of a private member of Parliament—and let me add, in order to bear my proper share of whatever guilt there has been in the management of the Fisheries in the past, that I have occasionally had the honor to be Acting Minister, sometimes for some months—and I want to say of this Department that under all governments and upon all occasions I have at all times found its officials faithful to their work, zealous and anxious only to do that which they believed to be best for the promotion of the great interests committed to their care. I know you are tempted at times to indulge in criticism, proper and legitimate criticism, but whenever occasion arises to criticise these gentlemen at Ottawa I ask you to bear in mind that their task is a broad and difficult one, that the subjects that they have to deal with are subjects upon which you yourselves are as a rule not able to agree, and that it will be inevitable so long as there is a department managed by a democratic country that there will be occasion for criticism passive and objective. All I ask and suggest is that in the good work you are doing — and it is good work—you should count yourselves co-workers with the officials of the Department at Ottawa, giving them the benefit of your knowledge and experience. I am sure that at all times they will be glad to welcome you, because of the sincere desire to advance the industry which I know exists among the officials of the Department, irrespective of what government is in charge. I am satisfied that by co-operation you can do justice to this magnificent industry, extending it in value and making it of a greater importance in the future even than in the past.

Although we here may think we know all about the fisheries, I have already admitted we have much to learn; and when a man finds a good thing in these days he wants other people to know it too; if I may quote a familiar statement, "It pays to advertise". Your Fisheries Association is seconded by the Canada Food Board and is doing good work in advertising the fish of Canada and particularly the fish of the Lower Provinces. As a mere piece of war work I am satisfied the country will appreciate this good service. Moreover, I am satisfied that it is going to be of permanent value; you have started an educational campaign, and even if it should end to-day you have spread a knowledge in Central

Canada of what the Atlantic fish is, its value as a food, and the advantages coming from eating more fish. We are often asked in Ottawa why A.B.C. from the Lower Provinces makes such a good mark. Well, as you probably know, there are three reasons: one is fish, the second oatmeal, and the third the shorter catechism. (Laughter). That is a great combination we have got down here in the Maritime Province. Now we are advertising the fisheries of Canada and the Lower Provinces through the work of your society and the work of the Canadian Food Board, and I feel there is going to be a continued interest in the fisheries which will last after the war has ended and that as a pure commercial question the work you are doing will reap a rich reward for the fishermen and the fish dealers of Nova Scotia and the Atlantic Coast generally.

Finally, if occasion arises to have a difference with the Department, gentlemen, count yourselves not as hostile critics but as friends desiring to correct, and I am satisfied that if this is your attitude nothing but good will be the final result. I thank you, gentlemen, for your kind reception. (Loud applause).

MR. G. J. DESBARATS.—

Mr. President, Your Honor, Gentlemen: I have first to thank the members of your committee and Association for their very kind invitation to myself and to the officers of the Department to attend your annual meeting in Halifax. It has been a great pleasure for us, for myself and for my colleagues, to meet you here, and I wish to congratulate you on the success of the meetings, on the excellence of the papers which have been presented and on the very harmonious discussion which has taken place at the different meetings. I wish to congratulate the Association on the very good work that they have been doing since they were founded two years ago, and I would refer more particularly to the assistance which the Department has found it has obtained from the executive and members of the Association.

The Department is often looked upon as an instrument of repression, as the organ, the instrument which is used to enforce a close season, to prevent people catching fish, and to restrict them in various methods. Now this is one of the apparent methods of the Department's administration, but that is not by any means the object. The object of this repression, the object of the limitations in fishing, is the encouragement of the industry, it is one of the methods of protecting the industry, of ensuring its continuance, of conserving it for future generations. It is a difficult and a thankless task frequently to have to put in force these restrictive regulations, but in this necessary work the Department has found help and assistance from the members of this Association, it has profited by their advice, it has had the advantage of information presented to it in the form of matters put before it by men who were experienced in the various lines of fishing, experienced in the handling of fish commodities; so that the Department feels it is under a deep debt of gratitude to this Association and its members for the assistance they have given it in carrying out the work of assisting the fisheries.

At the present time the fishing industry in Canada is enjoying a high measure of prosperity. This is due partly to the war, you have profited in some measure by war conditions and the food necessities of a country in war time, the necessity of economising on wheat,

meat and other food requirements of the army. The advantages of using fish to a much larger extent have been brought to the attention of the Canadian public by the Food Board and by the exhortations of your executive and members. But this, gentlemen, must not be regarded by any means as a war measure. It is merely the opportunity which has been given you of explaining the advantages of fish as a food to the public of Canada, it is an introduction which must be continued after the war. It must not be regarded as a temporary work but as the beginning of a work of extension which will be continued in the years to come and which will lead to a very large widening out of the fish business and bring fish forward as one of the main staples of food in Canada. Your trade overseas has grown,



G. J. DESBARATS, C.M.G.,
Deputy Minister of Naval Service.

has almost been created by the war, and should continue to a large extent after the war, although some of the conditions which obtain in the trade to-day will disappear. This, however, is an opportunity to establish foreign markets which can be retained after the war.

The fishermen of Canada are contributing a very large part in every way towards the winning of the war, not only by their work in handling an extremely valuable food product but by their work on the seas in obtaining this food. In the North Sea the trawlers have fallen one after the other before the attacks of the enemy. In this country up to the last few days we had been free from any such attack, but unfortunately in the last two or three days some of the fishing schooners have been attacked and sunk, luckily with no loss of life, as far as the Canadian schooners are concerned.

It is to be hoped that this menace will soon pass away and that our fishermen will be able to resume unhindered their regular occupations and to bring to our ports the food we so much need for ourselves and for our soldiers over-seas and for our allies.

Gentlemen, I thank you for your kind attention, for your invitation here this evening and for the opportunity of attending your meetings at Halifax. (Applause.)

DR. MACALLUM.—

Mr. President, Your Honor, Members of the Association and Guests:

I wish to thank you very much for the opportunity you have given me of attending such meetings of the Association. As I found my programme allowed me to attend I welcomed the opportunity to come and I regret exceedingly that I have not been able to attend all the meetings or to go on your afternoon trips and share your pleasures as well as your labors. I have attempted to attend as many of the meetings and as much of them as I could, but I am here in a double role, I am in Halifax not only as chairman of the Research Council, but also as secretary-treasurer of the Biological Board of Canada, and it is in the latter capacity that perhaps I feel my most complete justification for appearing before you to-night. I ought to say that the Biological Board of Canada has been one of my pet projects, and I am therefore going to emphasize its position here in speaking to you. When the British Association met in Toronto in 1897, it recommended by formal resolution that there should be instituted in Canada a biological station for the study of the problems connected with the fisheries and marine life. The British Association on that occasion appointed Professor Prince, Professor Penhallow and myself as a committee to initiate the measures leading to the establishment of such a biological station. We found it necessary to add to our numbers; we brought in and added to the committee several prominent biologists from all over the country: Professor Ramsay Wright, Professor MacBride, Professor Knight and Dr. MacKay and Dr. Bailey, the latter of the University of Fredericton, N.B.

We approached the Government and asked for a grant to establish such a station. We were accorded one, but it was so modest that our schemes had to be cut down to a microscopic degree. \$5,000 was the sum that was allotted; that really measured the appreciation of the government authorities of the day, of the magnitude of the proposal as it appeared to them. I must confess I was greatly discouraged. I was much more enthusiastic, and I had larger hopes than I have now.

To-day, if I received such a set-back my depression would be somewhat greater, I think, than it ought to have been then, but certainly the set-back that our hopes got was very great. However, we proceeded to work and gradually recovered our courage and our enthusiasm. But we met with many reverses, we did not find the fish industry responsive nor the government appreciative, and when you are criticising the government or the government is criticising you, please leave out of the question the Biological Board. The Biological Board has been doing the best it was able to do with the means placed at its disposal. Our people worked without any remuneration for years. Members of the staff—biologists—went to the stations annually, and worked assiduously all the summer

through on problems concerned with the fisheries and with the fisheries alone. Had they confined themselves to the purely scientific problems which they might have undertaken their reputation would have stood higher to-day, because work in pure science brings greater reward and appreciation in the scientific world than work for the practical world. This is a fact and you must understand it. You may think that when we have done our work we have achieved something amongst you—if you appreciate it; but let me tell you frankly that the one who works merely for the practical side is limiting himself in his world of appreciation. There is a wider world, a world extending outside of all your interests, which the scientific man if he applies himself to it can conquer, and conquer without any doubt whatever about the result.

Well now, all these gentlemen worked, and they worked against difficulties that discouraged them at times. Things would have gone on still in the same way but for an accident; a pure accident, possibly, but it was ordered by Providence, I think sometimes, nevertheless. We had great difficulty in getting the money that was allotted, we had great difficulty in getting any money at all. The amount was increased from \$5,000 to \$6,000 and to \$7,000 and \$8,000 and \$9,000 and \$11,000 and \$12,000, but it was only in 1911, I think, that it was \$15,000 or \$17,000. But it did not matter what was voted—we were not allowed to spend it. The maximum amount we could spend in one year was \$7,000 or \$8,000 out of that \$15,000, and all because of the machinery that blocked the way. Every government servant seemed to stand in the way. I will give you the instance which brought things to a crisis at last. In the winter of 1911, I think it was in January, the Board of Trustees of the Biological Station met and resolved that they should have a considerable quantity of reference literature at the station. They listed a number of books, estimated to cost \$800, and they thought that by sending this list in early they could have them ready for the first of May, when the station opened. Well, when the station opened the books were not there. Summer passed and not a sign of them. In November of that year Professor Wright got a letter from an official of the Department stating that he had consulted some underlings in the Department and he had learned that these books were in French and German and Italian, and the workers at the station and the professors there could not read these books, and that therefore he refused to order them. It was about the time that Professor Ramsay Wright was shedding the mantle of the Directorship, which then fell on my shoulders. This incident, more annoying than many others of a similar kind, typified the difficulties we had to contend with. We never could do our work, because we never got the money to spend; we were attacked and criticized by the fishermen because we did not do certain things, and we were hindered by the officials of the Department. In speaking of the latter, in the presence of Messrs. Desbarats and Found, I must absolve these gentlemen from blame on this score, because they were not concerned at the time, but I must explain to the members of the Association the difficulties that we had to encounter in reaching our present stage of effectiveness.

I saw that, if we were to get along at all, we must not be suspended, like Mohammed's coffin, between heaven and earth, unable to get up or down, and I re-

solved to have the Biological Stations put under a separate Board, with power to spend, untrammelled by officials, the amount of our annual appropriation.

We had to get that Board created under a Statute. Then I determined that its work should be wholly practical, that whenever anybody came to the station to do purely scientific work he must do it at his own expense. We have been only five or six years in operation now, but we have two stations, we have trained a number of workers, we have put at the service of your industry three of the most efficient men in science, Professor Knight, Professor Huntsman and Dr. Fraser,—I do not think there are more competent or effective experts than these—we strove to train others but unfortunately the war came and stopped all our progress in that direction. We hope now to make these Biological Stations more effective, more at the service of the industry, and I believe that with your assistance and with your appreciation we may some day reach a stage of effectiveness that will be beyond all criticism.

In the meantime, I would ask that you try to assist us to a certain degree. I am with you to-day for the purpose of discussing the formation of a guild in your industry. Let me explain what I mean by that. The British Government has made a strong effort to get the British industries to join together for the purpose of assisting themselves by research. Where an industry is too weak to take part in research the firms in it are encouraged to join together for the purpose of forming what is called a trade association for research. Quite a number of such trade associations have been formed in England, the government assisting them by grants. Sometimes they pay the whole of the money, all the expenses involved, in some cases they pay pound for pound, in other cases they merely assist by guiding the association itself along the right path. In this country, the Research Council has decided to encourage the industries to form guilds for research—we are not using the word "association." The members of the guild will pool their funds for the purpose of advancing the productivity of the industries by research. I have brought before a portion of your Association to-day the question of forming such a guild. The Research Council will endeavour to encourage the formation of these guilds and it will assist—it may assist eventually in a financial way when it is found impossible for the guild itself to provide the funds. In your industry it is possible to have a guild which will attack very many of the problems that face you now. I spoke to-day to a portion of the Association, which responded most enthusiastically, and I am to meet in a few minutes another section to discuss the formation of a guild, having the object of assisting the development of the industry by research.

Now I must leave in a moment or two, so I must speak briefly. All my remarks this evening have been of a desultory character. I should very much like the opportunity of placing my whole programme before you, and on another occasion this may be presented. For the present, my work here has been to create a favourable atmosphere for our proposal to form a guild in the fishing industry, which guild will assist research by every means in its power and will

select the problems and bring them forward for research.

I thank you, gentlemen, for the opportunity of speaking in this fashion. When I came into the room I did not know I was to speak, otherwise I might have boiled my observations down to a degree consistent with the situation. (Applause.)

"OUR GUESTS."

Proposed by Mr. Arthur Boutillier.

Mr. Chairman, Your Honor, Gentlemen:—On behalf of the Canadian Fisheries Association I may say that we feel very much honored at having with us to-night a number of gentlemen who have come from a great distance to attend this meeting. Coupled with this toast to "Our Guests" I would like to make special mention of the Hon. Mr. Stone and Hon. Mr. Hickman, members of the Newfoundland Government, R. E. Coker, representative of the Department of Trade and Commerce of the United States Government; Mr. Millett, representative of the American Fisheries Society; Mr. Ashcroft, of New York; and Dr. Adam Short, chairman of the Historical Document Commission; Hon. E. H. Armstrong, representative of the Nova Scotia Government; Mr. W. L. Hall, leader of the Opposition in the same government, and Mr. Squires, representative of the Ontario Government. Mr. Stone is Minister of Marine and Fisheries in Newfoundland, and it gives me much pleasure to say that he has asked to become a member of our Association, and when he goes back he is going to further suggest that each succeeding Minister of Fisheries become a member of this Association. (Applause.) It would ask that you arise and drink to the health of "Our Guests."

HONORABLE MR. STONE.—

Mr. President, Your Honor, and Gentlemen:

I am very pleased indeed to be afforded the opportunity of being with you to-night, and very grateful for the privilege extended to me by the Canadian Fisheries Association of attending this Convention, it has been an education to me. I am also glad to have this opportunity of congratulating Mr. Brittain on the high office which he has been called upon to fill as president of the Association; I have only had a short acquaintance with him, but judging from it, I do not know that they could have made a better selection. (Hear, hear.)

Newfoundland, as you know, is the oldest British colony. It received its first responsible government, I think, in the year 1855. The island has been divided up into electoral districts to the number of eighteen, with a representation of thirty-six members, who constitute the House of Parliament. In the year 1914, the year of this great world war's commencement, Newfoundland, with a population of about two hundred and forty thousand people, was practically unknown to the outside world; but by promising to the mother country 1,000 naval reserves and to the army a battalion of an equal number and through a thorough training received by them at Gallipoli, in France and upon the high seas, she has been brought into a prominence rightfully hers; she is no longer a colony, as it were, she is now classed as a Dominion of no small importance. (Hear, hear.) While we claim the privilege of being perhaps the oldest colony, I think we can also claim the privilege or the credit of being the youngest dominion.

The fisheries of Newfoundland have been in operation for about four hundred years. Up to the present time, to my mind, they are only just in their initial stages and must be further developed, and to develop the fisheries still further you must, I think, work along scientific lines. We have quantity, quality and variety in our Newfoundland waters, as good as you will find in or around any of the coast lines of the world. Newfoundland, as I said, has been brought into prominence by the heroic deeds of her sons, and we are better known owing to this world-wide war, and it is my belief that through the heroism of our boys capitalists will be encouraged to come into the country and our fisheries, our lumber and our minerals will be further developed. Newfoundland derives her existence from her fisheries. The total amount of revenue, I think, speaking from memory, is



Hon. J. G. STONE,
Minister of Marine & Fisheries, Newfoundland.

Hon. A. E. HICKMAN,
Member of the Executive Council, Newfoundland.

something like \$22,000,000 and the fisheries contribute to that over \$17,000,000, so that when I say that she is wholly and solely dependent upon her fisheries you can understand what I mean.

I thank you, gentlemen, for the kind hearing that you have given me. This Convention has been an education in itself, and I am certainly glad that I had the opportunity of attending meetings of this nature. I shall go back to Newfoundland with happy memories of the Canadian Fisheries Association and of the pleasant events with which I have been connected in Halifax.

Mr. Stone also spoke regarding the importance and necessity of further development of the turbot

fishery, which is a splendid article of food.

MONORABLE MR. HICKMAN.—

Mr. President, Your Honor, Gentlemen:—When I return to Newfoundland and tell the people of the information and knowledge we have gleaned from your deliberations, of the great enterprise and determination of your Association, I feel sure they will be glad we came and will always endeavour to send a representative if you will be kind enough to extend us an invitation.

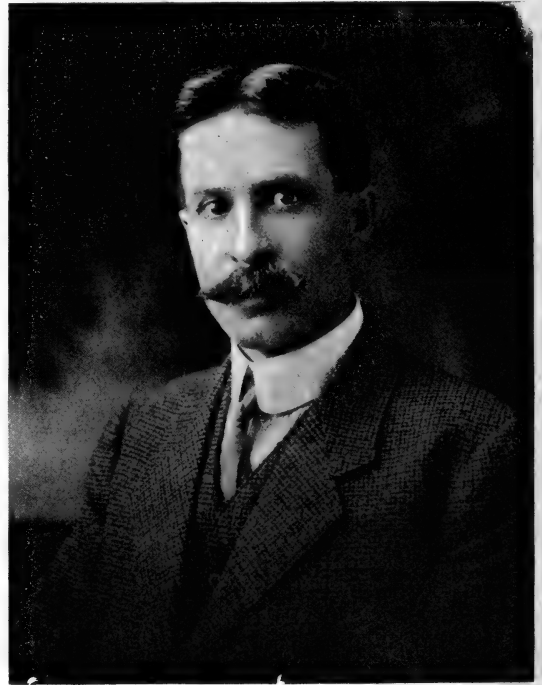
I take this opportunity of congratulating the newly-elected president on the important office he has been called upon to fill as president of such an association as the Canadian Fisheries Association. I only wish that we could extend the Association to include Newfoundland, but at the present time I suppose we cannot do it.

There is not much I can tell you concerning the fisheries, we are here simply to listen. The members of your Association are interested particularly in fresh fish, it seems. Newfoundland is a large fishing country, as you know, and much of our fish is salted and dried and exported to European markets; our principal markets are Spain, Italy, Portugal, and—prior to the war—Greece. Since the war, we have had some difficulty in obtaining tonnage to convey our produce to market, but we overcame this last year by purchasing some sailing vessels, which did the work. During the early part of last year the British Government, through the Allied Chartering Committee, asked us to pass a minute of council to prevent sailing vessels from going into the war zone, and at the same time made the same request to the Governments of the United States and Canada. The latter complied, but we could not do so. They could not give us steamers and we had to use our sailing vessels. I mention this to explain the reason why Newfoundland sailing vessels are permitted to go into the war zone, while those of the United States and Canada are not.

The value of our fresh fish exports up to the present time is not very great, about \$100,000, I think, principally herrings. Some years ago the United States people came to Newfoundland (as they do now, in fact) and bought a large quantity of our herrings, which they froze and took to the United States for food purposes. Since the cold storage has been in use, however, we find that they do not take as many fresh herrings, they take mostly salt herrings; the cold storage houses on the New England coast take care of the fish caught there in the early season and freeze their requirements. However, we would like to see the fresh fish industry started in our country, because we have a great many fish there which are of no commercial value to us at the present time, and which could be utilized if we had cold storage facilities. We have a little fish there called the caper, which comes to us in the month of June. It is a small fish about the size of a smelt, and it comes in teeming millions, the waters are simply full of them. They are only used for fertilizing purposes, and they disappear in the month of July and we never see them until the next year in June. Then there is a very delicious fish which is always sought after by the people of Newfoundland; some have been frozen and sent to the United States where they found a ready market at good prices. Besides this, there is the skate and the flat fish and the dog fish which are at present of no commercial value whatever. I have seen boatloads

of skate fish, flat fish, dog fish, and grey fish, thrown away or used for fertilizer. We should like to get the cold storage business introduced so that we could make our fish of some commercial value. I am hoping perhaps that this will interest some of our members who have some money to invest. They should come and visit us and see what can be done.

Then there are other articles which should be made of some commercial value. There is the carcase of the seal. Each year two or three thousand seals are caught off the coast of Newfoundland. The fishermen take off the pelts with the layer of fat between the skin and the body, leaving that attached to the skin. They bring the pelts in and leave the carcase on the ice. Now, the men engaged in the seal fisheries say that seal flesh is as delicious a morsel as one could



W. A. FOUND,
Superintendent of Fisheries, Dominion of Canada.

wish to eat. No doubt, if we had some means of freezing this valuable fish we could feed half the province of Ontario. The seal is a wonderful fish. The seal fishery commences about the 13th of March, the seal herd comes down from Labrador and gets on the ice around the Newfoundland coast. The young, which are only about 5 or 10 lbs. weight when born, in two or three weeks weigh fifty to sixty pounds, and are a dark color. The seal exists on snow and ice. St. Peter's Day is usually the time for finding the seal and then they kill the herd in a very short time and bring them in.

I must again thank the Association for their kind invitation. I have very much enjoyed my visit and I am now looking forward to the next Convention, to which I hope I will get an invitation. I understand it is to be held in the West, but wherever it is decided

to hold it, I should certainly like to attend.
MR. R. E. COKER.—

Mr. President, Your Honor, Gentlemen:—I have been very greatly impressed with the meetings which I have had the privilege of attending. I do not think it would be fair to me to occupy your time to-night at any great length, but I would like to call attention to one feature of your Association which has greatly impressed me. This is well expressed in the name. I have observed that the name is not the Canadian Fishermen's Association, not the Canadian Fish Producers' Association, not the Canadian Fish Wholesalers' Association, but the Canadian Fisheries Association, by which you bring together all phases of the one industry upon which the success of all the different branches is dependent. I think that when we get together the different branches of any industry and talk over our conflicting interests we soon begin to realize that the points of difference are very insignificant compared with the importance of the main objects upon which all are dependent. It is in recent years particularly that we have had such a remarkable illustration of the value and the success of co-operative effort, pulling together, and we are learning that there are a great many ways in which we can render service.

I only want to add, speaking for myself and for Dr. Hugh N. Smith, Commissioner of Fisheries, as well as the Secretary of Commerce, William C. Redfield, that we greatly appreciate not only the hospitality and courtesies which you have so freely offered me as their representative, but the general goodwill which has been made manifest and which I believe characterizes now and always the relations which will prevail between your country and our country. (Applause.)
ARTHUR L. MILLETT.—

Mr. Chairman, Your Honor, Gentlemen:—I suppose that I am one of those "Yankees" to whom His Honor the Lieut.-Governor referred in his opening remarks. I might say in passing that I am very proud of it. (Hear, hear.) When I received the invitation, as treasurer of the American Fisheries Society, to attend this Convention, I was delighted, because it opened to me an opportunity for the first time in eight years of participating in anything of an international nature, and I rather dote on international affairs. It became necessary for me, in accepting the invitation, to ask my Governor for permission to travel to a foreign country. When my authorization was returned it was with a written notice to represent the State, so you can imagine that I was doubly gratified to come.

It touched me deeply to hear His Honor speak in such a feeling way of the work Massachusetts did in your late calamity. One of my first duties on return to the State House will be to go and see Governor McCall and tell him how you felt about it. (Hear, hear.)

Now, Mr. President, speaking as one from Massachusetts, I feel that there is a great community of interest as far as the fisheries and the fishing business goes, between Massachusetts and Nova Scotia. We are most closely allied in our fishing interests; vessels ply back and forth between our ports, and the larger part of our fishermen in Gloucester and Boston are men, as you all know, coming from Newfoundland and Nova Scotia. When I first came here I was introduced to the honorable gentleman from Shelburne and

Queens; and in the course of conversation he said to me, "There is an expression that if you scratch a Russian you get a Tartar, but," he said, "I once stated in a speech that if you scratched a Gloucester Fisherman you would find one of my constituents," and I really think that was so. (Laughter.)

Now I do not know what more I can say, gentlemen. I might say a few words on the passing, on what I hope is the passing, of the ancient and worn-out treaty of 1818. I think it out-grew its usefulness many years ago, and I don't think anybody will dispute that statement, it is a wonder to me something newer did not take its place long ago. I have very great hopes of the good that will come when the report of the American-Canadian Commission is made public. I believe and hope that it will be satisfactory to both sides. In fact, I may say that I hope the result will be something like a story that I heard once of two old farmers coming together on the main road from different towns. They stopped their horses to chat. Said the first one, "Any news down your way?" "No," says the other, "nothing particular, what's yours?" "Oh, nothing much. Old Widow Jones is dead." "Dead?" "Yes." "What complaint?" "What complaint? Oh, no complaint, everybody satisfied." (Laughter and applause.)

I would like to make a few remarks as to the part that the fishermen are playing in this war. As you know and as I said before, the backbone of our fisheries are the Newfoundland and Nova Scotian hearts of the men that man the vessels. Many of these men have not heeded the injunction and the invitation given to go home and go to war. They have got until a certain date and then they must be registered with us. I anticipate, however, that most of our draft boards will put them in a preferred class, believing that their services are as actually necessary on the high seas as they are in the trenches. We certainly must have fish to fill up the gap caused by sending over so much meat, and the fishermen are the only men that can supply us, because you can't make a fisherman in a day or a week or a year; he has got to have part of it born in him. Now in connection with that I may say that the Boston and Gloucester fishing fleets are trying their utmost to increase their catch of fish, trying to live up to the minute of Mr. Hoover's injunction to speed up the fisheries. This year, gentlemen, in Gloucester alone we exceeded previous figures up to date by 15,000,000 lbs., and this is also true of Boston in practically the same amount. If all our fishing ports along the Atlantic did the same in proportion, there would be no question about how much beef and wheat we could send over.

Speaking of the community of interest between New England and Nova Scotia and Newfoundland, I may say that Gloucester alone last year took in thirty million pounds of cod fish from Nova Scotia and Newfoundland. That is just one item, salted cod fish, so you can see to what extent we are interwoven, especially in the fish business.

In closing I will speak of a little incident that I experienced personally to-day, which gave me visions of the brick wall and the firing squad and so forth. This morning's Halifax papers came out with an item about people crowding up on the hill here and looking for the submarine which was supposed to be coming up the harbor in tow of some naval vessels. At the close of the article it stated that unfortunately such was

not the case. I happen to be unfortunate enough to be city editor of the Gloucester Times, so this aroused my newspaper instinct right away. Since I left home four of our vessels have been torpedoed. At about 1.30 I was going to lunch when a friend of mine handed me a telegram with the remark that he did not know it was for me so he had opened it. I looked at it and found it was from our marine man whom I had left in charge of the paper. It read "Excitement here and in Boston, stories of captured submarine towed into Halifax. Is this so, rush reply." Well, I hustled out to the desk in-Halifax Hotel and wrote my reply, winding up that unfortunately it was not so. After lunch I went to get my key to go into my room, and the clerk handed me a telegram. "Why," I said, "that is the telegram I sent two hours ago to Gloucester." "Yes, but they would not accept it." Well, I was a stranger in a strange land and immediately went up to my room to think. I had found the telegram open. Well, I could not think what it meant. Did they think I was a German spy? I tell you, my heart stopped beating for a few moments, but finally I made up my mind to take the bull by the horns. I went over to the telegraph office and at once sought an explanation. As I requested it in kindly terms, a young man stepped up and said he would look the matter up, and I explained the position, the anxiety of our fleet and how I did not want to take any chances of the vessels going out thinking it was true that the submarine had been caught. So after I had justified myself, and had my reply accepted by the censor, I went across the street with a great deal lighter heart.

In closing I would like to tender my personal congratulations, Mr. President, upon your election, and also an official one on behalf of the American Fisheries Society. I also want to congratulate your Association in having such an able president. I came here anticipating that I would learn something by hearing these papers read, and I am not disappointed, I am going home very much satisfied in that respect, and I am sorry that I cannot stay longer.

MR. ASHCROFT.—

Mr. President and Gentlemen: I would just like to express my pleasure at the very kind reception you have accorded me, and to congratulate the Association on the fine body of men that you have gathered about you. My one wish is that we people in the United States could have an association similar to this, so that we might some time in the future co-operate with your Association. (Hear, hear.) The Company that I represent buy a good many millions of pounds of fish in Canada during the season, and I hope that we will continue to do so.

HONORABLE E. H. ARMSTRONG.—

Mr. President, Your Honor, Gentlemen: I assume that this is the last but not intended for the least of the toasts presented to-night and I am exceedingly obliged to the Association as well as to His Honor the Lieutenant-Governor for suggesting that I should speak at this late hour. His Honor, in his address, called you Brother Fishermen, but I do not know that I can say Brother Fishermen, and I am not sure that all these gentlemen before us are of the same class of brother fishermen as His Honor the Lieutenant-Governor. I am afraid that most of his fishing, like my own, has been done with a rod or fly or other instrument of torture, or the simple thing that produces equally good results as the fly or worm. My earliest

experience in fishing was in the shad fisheries many, many years ago, but as they became extinct I had to seek other occupations, so I cannot speak to you from the standpoint of an actual fisherman.

I thank you for the courtesy extended to me as the representative of the Premier of Nova Scotia. If he were here, and I regret his absence as I know you all do, he would have been delighted to have recognized or responded to this toast. We have deep-sea fisheries and coastal fisheries on our Nova Scotia coast and it is most natural that we should all be interested in the question of the fisheries — I suppose there are in Nova Scotia between thirty and forty thousand people engaged in this industry. I have been very, very pleased indeed to learn more of the Canadian Fisheries' Association and all that it stands for, as the representa-



ARTHUR L. MILLETT,
Treasurer, American Fisheries Society; Member of
Massachusetts Fish & Game Commission.

tive of the United States government said a moment ago. The fishing industry is a great industry. I was reminded on reading an account in the papers of the very optimistic attitude which has been assumed by the Association of those well-known and memorable words of that great Nova Scotian, Joseph Howe, in that great speech of his in 1854: "I am not a prophet nor the son of a prophet, but I know that the day must come when Nova Scotia, small as she is, will maintain half a million men upon the seas." The Honorable Joseph Howe, in his day and time, made many prophecies which then seemed fanciful but which have been since fulfilled, and I believe he was not far wrong here. There are great possibilities and opportunities in this industry, and I think we should all do what we can to encourage and help it.

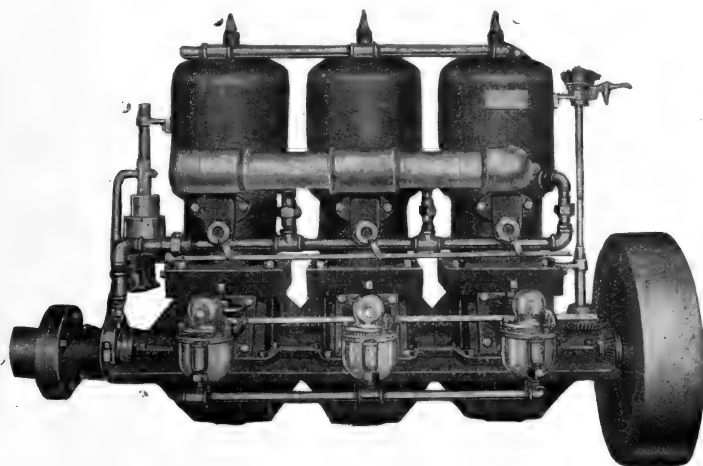
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That patriot who returned the other day from the German prison camp, the Honorable Dr. Beland, said that the only politics for civilized countries to adopt was—"Win the war." As a politician, of course, I might be entitled to indulge in politics, but I do think the sentiment expressed by the Honorable Mr. Beland is the one sentiment that should concern us all at the present time. (Applause.) Therefore, any observation I might make in so far as our Province is concerned, of a political character, would be entirely out of place.

I am impressed and I think the fishermen and the fish interests of Canada should be impressed with the sentiments expressed by Dr. McCallum. There is a tendency towards the conservation of our natural resources which is steadily growing in Nova Scotia and the sister provinces all over Canada. If there is one thing more than another, perhaps, that we as public men have been too neglectful of in the past, it is the conservation of these resources: we must conserve and develop them for the benefit of future generations. I like that tone, it is along the right lines and should be encouraged. This scientific study should not be study alone, it should be followed up by you, you can disseminate this campaign of education. It applies not only to the fisheries but to every other great resource in this great country of ours.

I thank you again for the kindness and courtesy extended to us, and I am very sorry that I have had to make my remarks somewhat at random. As far as the Government of the Province of Nova Scotia is concerned, and I am sure that if the leader were here we would assure you of it, the position of the government on this question is one of vital interest, and whatever can be done to develop this matter along the lines outlined by Dr. McCallum will receive the earnest consideration and hearty co-operation of the Nova Scotia government, every member of which is or should be interested in the development of the fisheries. (Loud applause.)

MR. W. L. HALL, M.P.P. —

Mr. President and Gentlemen: It is very good of you to give me an opportunity at this late hour of addressing this representation of the Fisheries Association. I feel that the hour is very late and that I can say so little that would be instructive to an audience of experts such as we have here, that it would be hardly fair to take up your time.

I concur in all that was said by my honorable friend the Commissioner, that for the present there is not very much politics down here, we are mostly concerned in winning the war. While as members of the Provincial Legislature we are not directly interested in commercial fisheries (we have had our little difference about other sorts of fisheries) yet as Nova Scotians and as citizens we are all vitally interested in this industry. I believe that ultimately the fisheries will be the primary industry of Nova Scotia, and from an economic standpoint it is the best industry for us. I am sure that a meeting of this sort here in our capital city will be an incentive to the future development of the fisheries of Nova Scotia, and for that reason I am glad to meet you here and hope you will be in Halifax again. In Nova Scotia interest in the fisheries is growing, as elsewhere throughout Canada, and

I believe that in the course of a few years the industry will have increased enormously.

I wish to congratulate you, sir, as the other speakers have done, upon your promotion to the Presidency of the Association, and I also congratulate the Association upon your election. I know you are a "live wire" by reputation, and I believe that the interests of the fishing industry of Canada will be safe in your hands. (Applause.)

DR ADAM SHORT (of Ottawa).—

Mr. Chairman, Your Honor, gentlemen of the Convention: It would require indeed something very interesting to keep your flagging attention at this late hour, and I must confess I have not anything to justify keeping you. I feel particularly that inasmuch as I am not technically a fisherman and did not happen to be here simply to attend the Convention, but more or less by coincidental accident, I should not take up your time; but I am personally very much interested in the fishery question in connection with any work of taking up documents and so on, and there is no single industry of the country, as most of you know, which is of such importance to the nation as the fisheries. Two hundred years ago Canada did not amount to a great deal, her industries did not amount to a great deal, but there was one industry that had been in operation for two hundred years before that, and that was the fisheries. The fishing industry was quite a live affair many years before Columbus dreamed of coming across the Atlantic. Columbus was a newspaper man in the ordinary sense of the word, he was out as an adventurer and was very much advertised because he was operating under political auspices and bringing fame to the crowned heads, and these other people were lining their bags with money drawn from the fisheries, and the fisheries of this continent, of this northern section of it at any rate, have been famous for producing money and men ever since.

The representative of the Massachusetts government will agree with me, as already remarked, that there is the closest kind of connection between Massachusetts and these Atlantic coasts that are now part of the Dominion of Canada and the oldest colony, Newfoundland. The history of that is very interesting. The history of Nova Scotia itself is very interesting: I think if I had the time I could tell you something about your own history and its importance which perhaps has been passed over, because, if I may say so, this study of history for its own sake, that is, for the presentation of the actual facts as illustrations and instances of human development and interest, is rather neglected in Canada, it is more understood outside of Canada than it is in Canada at the present time, but that will not continue. It is the intention of our Board to see that it shall develop more fully in Canada; and as I say, my mission down here is exactly in connection with that, because you have some of the most interesting record of history that laid the foundation of political as well as commercial interest in this country, and it is my duty and intention to look into that. I hope that we will produce results from our observations later on as we have done for the West. Such things as we have published already, however, have been taken advantage in nine-tenths of cases outside of Canada. These volumes are used as text books



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in Oxford and Cambridge and in the American Universities and they are clamouring for more.

I thank you, gentlemen, for your kind attention.

MR. SQUIRES, representing the Minister of Public Works from Ontario.—

Mr. Chairman, and members of the Canadian Fisheries Association: I am sure that I would be ungrateful to you if even at this late hour I did not thank you and the members of your Association for the splendid time that I have had during my stay in Halifax. I, however, would be just as ungrateful to those present should I detain them at any great length with a speech. I will say, Mr. President, that I am very glad to have an opportunity of extending to you my congratulations on your election, and to your association the kind feelings of the Prime Minister of the Province of Ontario and of the Minister of Public Works, and I can say that your Association have all

fresh water fisheries and salt water fisheries are more imaginary than real.

Had I the time I might tell you something of the extent of the fresh water area of the province of Ontario; but to show you something of the immense possibilities of the fresh water fisheries, let me just say in passing that we have forty thousand square miles of water area, we have a shore line in the province of Ontario almost as great as any province in the Dominion of Canada, with the exception of one province. The possibilities, according to the statistics given to us by Professor Huntsman, show that taking the average in Lake Ontario, the area that we have is capable of producing annually eighty million pounds of fresh water fish. So that although you may get into the way of considering the fresh water fisheries only secondary, you see that they occupy naturally first place.

I do believe that there should be the closest co-operation between us; the people in Ontario know little about the salt water fish excepting what they have learned in the last few years, I am speaking of fresh fish now. I do not mind perhaps if you have a laugh at my expense as you probably will have when I tell you that until I married a New Brunswick wife a few years ago, I did not know that codfish was ever eaten as a fresh article, and this is probably true of fifty percent of the people of Ontario until very recently. It gives you an idea of the wonderful field you have before you. Ontario has a population of two million possibly eight hundred thousand or nearly that; you will find that if the fish campaign now being carried on in our province by yourselves, the Food Board and the Government, is productive of the results which are anticipated, this province alone will consume two and a half times as much fish as is taken in the entire province. Fresh fish taken amounts to forty million pounds per year, and on the basis of one pound per week per person it would require as much fish as we produce in the province, provided all the fresh water fish possible were produced there. But 75% is exported, so you will see that you have a field in the province of Ontario which it would be hard to calculate. There is a possible market for a great many million pounds of fish that has not as yet been reached. The basic idea behind the Ontario government in entering into the fish question was a national idea, it was with the idea of assisting in every possible way in the conservation of those foods which are so much needed by our Allies and our boys overseas that they wished to make the eating of fish more popular. While perhaps in certain sections they may not accomplish just that average per head, yet I will say that if certain statistics we have are correct, they indicate that the province is eating twice as much fresh water fish as they were twelve months ago, and I am satisfied that you can tell us that they are eating a great deal more fresh salt water fish. Appetites are constantly changing, we use a variety to-day and ask for another variety to-morrow; but I am satisfied that if we can get the people in the way of eating fish we are performing a great national service. There are some sections of Canada where they only believe in eating fish one day a week, that is one of the difficulties the fishermen have always had to contend with; but in Ontario the people can use fish five, six or seven days a week if weather is not too warm; I notice in to-day's paper that we had it 101 in the shade there, and I imagine from that that there were very few fish cooked in Ontario yesterday. Toronto is sometimes spok-



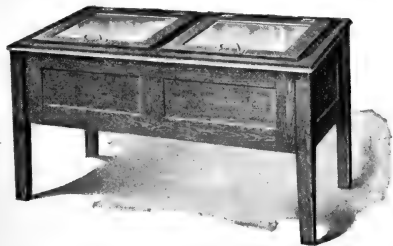
H. P. ROBERTSON,
St. John, N.B.

ready expressed your appreciation of the work that they have done in a resolution that was unanimously passed to-day, however, we will not dwell upon that.

There are three things that I have learned in connection with the work of your Association, after all the cobwebs are cleared away there are three great and fundamental branches of the fisheries question—that of production, that of distribution, and that of reproduction. Production could well be called a trade or an art, I fancy that perhaps, from all I have heard, it is more of an art than a trade. Distribution is a business proposition pure and simple; but in connection with reproduction, I came to the conclusion that that was a science and should be dealt with in a scientific manner. After you have had all the differences cleared away there are those three fundamental things that have to be considered in connection with the work of your association; the differences between

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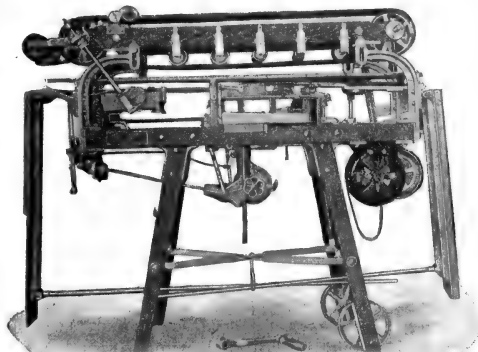
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en of as an orange city, although it depends upon the view point you take of it; but one good thing the Ontario development campaign has done was to make 1,000 or 1,500 Orangemen eat fish on the 12th of July. (Laughter.)

Thank you, gentlemen, for this opportunity of speaking on behalf of the people of Ontario. I congratulate the Association on the good work it is attempting, and I am sure we all wish it every success.

THE MOTION PICTURE AS AN EDUCATOR.

The success of the Canada Food Board's fish films in encouraging the greater consumption of Pacific and Atlantic fish throughout Canada is but one phase of the value of the motion picture film to the fishing industry.

The resolution passed by the C.F.A. at the Halifax Convention advocating compulsory inspection of pickled herring in accordance with the methods prescribed by the Pickled Fish Inspection Act of 1914, leads us into the belief that some excellent educational work might be commenced immediately in the proper packing of Canadian herring by means of the motion picture.

We would suggest that the Fisheries Department have a film made showing the construction and type of barrels to be used, and every step in the proper preparation of herring, mackerel, etc., packed under the requirements of the Act.

This film, when prepared, should be circulated throughout the fishing centres accompanied by a competent lecturer, who could explain the scenes illustrated and the methods to be employed. The film would be especially valuable in that it could be shown in centres during the winter or at periods when the herring were absent—thus doing away with the necessity of being in particular localities only when the herring or other fish were striking in.

There are a host of places around the coast where such a film could be shown, and if the Department had a machine, the pictures could be screened wherever electricity was available.

Educational films might well be employed in many other branches of fish curing—the salting and drying of codfish on modern lines might be another subject.

Education nowadays must be made attractive and nothing spreads a gospel or draws a crowd more so than the "movie."

THE FRASER ENGINE.

The Fraser Engine is very well known in many of the fishing districts in the Maritime Provinces, but not so well known in other parts of Canada. This engine is manufactured by Murray and Fraser, New Glasgow, N.S., and Mr. T. D. Fraser, who designed the Fraser engine formerly manufactured by the Fraser Machine & Motor Company, is in charge of the mechanical department of the firm. Mr. W. G. Murray looks after the business end.

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CHARLOTTETOWN, P.E.I.

The results of the Fisheries Convention held in Halifax, have been on the whole quite acceptable to the fishing interests of this province. The regulations made with regard to lobster fishing met with general approval, as lobstering is now the most important branch of Prince Edward Island's fisheries. The catch last spring is now considered to be only between sixty and seventy per cent of a normal average and therefore the desire to conserve is uppermost in the minds of packer and fishermen.

The granting of the fall fishing season last year is declared by almost all packers and the majority of the fishermen as being a step in the wrong direction, because they believe it has been responsible for the shortage this spring.

The visit of the experts here this summer and the conferences that have been held in this province and in Halifax, have been of much educative value along the line of inducing fishermen to recognize the need of preserving the spawn lobsters.

The propaganda by the packer and by the Press



Left to Right:—A. S. Brown, Kingsville, Ont.; N. S. Cornell, Port Stanley, Ont.; A. E. Crewe, Merlin, Ont.

must continue until this "killing of the lobster that lays the golden egg" is effectively stopped.

The proposition that sanctuaries be established does not meet with the unanimous approval of the packers and fishermen. For instance, in Richmond Bay, which will come under the category of sanctuaries, there are eight or nine factories, and these could not very well be shut down unless the owners were compensated.

The decision made in Halifax to equalize in a large measure the length of the seasons was heartily endorsed here, as all along there has been a feeling of resentment that certain sections in Nova Scotia, for instance, were allowed seven months, whilst in this province the law only allowed two months and bad weather reduced the number of actual fishing days still lower.

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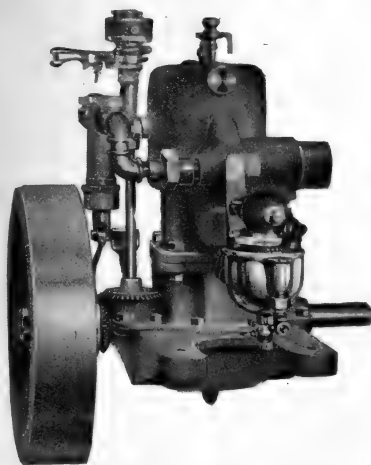
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When you buy an Imperial you are getting an engine backed by years of service so satisfactory that Imperial Motors are the standard fishing boat engines of Eastern Canada and are to be found in every fishing district in Canada and Newfoundland. They are the best that money, skill and experience can produce.

General Dimensions of 5 H.P. Model "A"

Bore of Cylinder, 4½ inches; Diameter of Propeller, 2-blade, 18 inches.

Stroke, 4 inches; Diameter of propeller, 3-blade, 16 inches.

Weight, engine only, 230 lbs.; Shaft diameter, 1 inch.

Complete shipping weight, 420 lbs.; Shaft length, 5 feet.

For full information regarding this or any other Model send for catalog.

The Motor that Makes the Mark.

BRUCE STEWART & COMPANY, LIMITED.
 CHARLOTTETOWN, : : P. E. I.

operations have been hampered in some sections by lack of bait. Around Souris, where the headquarters of the Gorton Pew Company are located, some of the fishermen have been making as high as fifty dollars a day when the fishing was at its best. They are receiving from \$2.75 to \$3.00 per quintal from the knife.

Some complaints have been made among the consumers in the city that they have to pay seven cents per lb. retail, and they consider it too wide a margin between retail prices and the prices paid the fishermen. The quahaug season closed last month, and since then there has been more attention than usual paid to the canning of clams, which are quite abundant around our coasts and which have been neglected heretofore, because other branches of the fisheries seemed to afford more lucrative returns.

Oyster fishing, as is well known, is steadily declining in this province and the attempts to restore it by means of artificial cultivation have been disappointing. A number of companies which were organized to carry on the work have wound up or suspended operations; but, nevertheless, the preparatory work which has been done in the way of cleaning up the beds

and the distribution of collectors of spat will have a good effect later because much spat from the public beds heretofore lost, will get a chance to develop. It is gratifying to know that there is apparently no trace this year of the disease which spread such havoc among the oysters last season. This was first thought to be brought here by the stock imported from the United States to plant the cultivated beds, although investigation has shown that oysters a considerable distance away from such beds were also affected.

Although investments in oyster development have been retarded by the war and there have been unforeseen difficulties and drawbacks, the outlook is not to be viewed pessimistically.

The decline in this branch is shown by the fact that about 25 years ago, 58,000 barrels was shipped in one year from the province; last year there were only 3,000. Whilst the catch in Richmond Bay, the home of the far famed "Malpecs," has dwindled almost to the vanishing point, there has been an increase in the number taken in East and West Rivers.

Some fair catches of herring and mackerel have been netted during the past month.

Canadian Trawler Becomes Hun Raider

National Fish Company's trawler "Triumph" operating on the Western Banks was overhauled by a German submarine on the afternoon of August 20th. A prize crew of 16 men from the submarine was put on board and two light guns and wireless installed. Thus equipped, the former Halifax fishing steamer became a German raider and commenced cruising over the Western Banks sinking all the fishing schooners in her course. The parent vessel evidently kept handy to the trawler and no doubt assisted in destroying the fishing fleet.

Reports to hand state that many American and Lunenburg craft have been sunk. The trawler-raider would come up alongside the schooner and compel them to lower sails. The crews were allowed to escape in the dories and the vessels were destroyed by bombs.

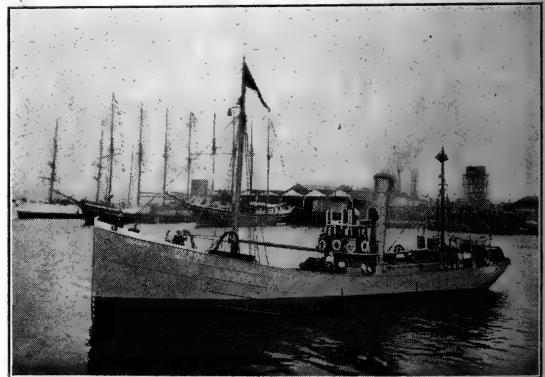
The crew of the "Triumph" landed in their boats at Canso, N.S. Gjert Myhre, skipper of the "Triumph," stated that the submarine captain told him that six submarines were operating on the American coast and that they intended to wipe out the fishing fleets. The crews of the ships destroyed were not molested and those of the "Triumph" were given refreshments and cigarettes by the Huns before they took to the boats.

Threats by submarine commanders that they intended to sink the Lunenburg fleet were made in the early part of August to the skippers of schooners sunk off the southern coast of Nova Scotia. One commander stated that he knew every vessel in the Lunenburg fleet, and the names of all the skippers. It was stated by the crews of the craft sunk then that the commander of one of the German subs was a former Gloucester fishing skipper.

It is safe to assume that the personnel of the submarines operating on this coast are composed of men familiar with our waters and the vessels plying thereon. Numerous German-Americans and possibly Ger-

man-Canadians—fishermen and coasting trade sailors—vanished mysteriously from Canada and the States after war was declared, and these men are probably in the submarines now raiding the Western North Atlantic.

The effect of the sinkings will result in a serious depletion of the fish supply from the Atlantic coast and



Steam Trawler "Triumph."

the Bank fleet will not venture out while the raiders are around. Supplies, for a time at least, will have to come from the Gulf of St. Lawrence, the Bay of Fundy and the inshore grounds, and those craft which venture off shore will have to be guarded by naval craft of some kind.

It is not a difficult feat for submarines to play havoc among our fishing fleets. They are scattered over



Why Do "Hi-Press" Give Such Unusual Wear?

"Hi-Press" Boots are delivering so much more wear—keeping feet so much more comfortable—that they are unquestionably the most popular footwear among fishermen today.

The Boots' success is based on two things—knowledge and good will. First, we *know* rubber. Goodrich has meant "Best in Rubber Goods" as long as you can remember, and it takes wonderful skill to so toughen the rubber that it will outlast ordinary boots **TWO TO ONE**.

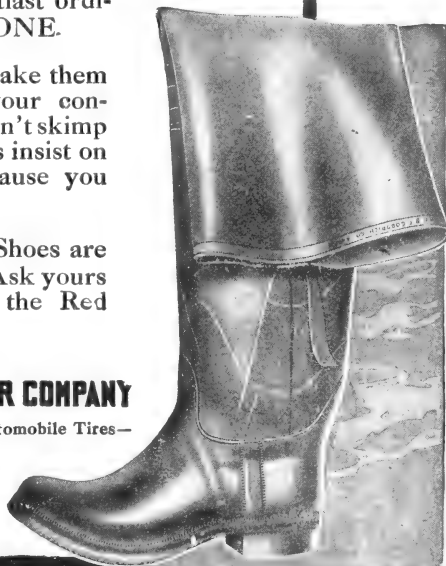
Again, we **WANT** to make them **RIGHT**. We want your continued patronage. We won't skimp—we want you to always insist on Goodrich Goods because you know they are best.

"Hi-Press" Boots and Shoes are sold by 40,000 dealers. Ask yours for the footwear with the Red Line 'Round the Top.

THE B.F. GOODRICH RUBBER COMPANY

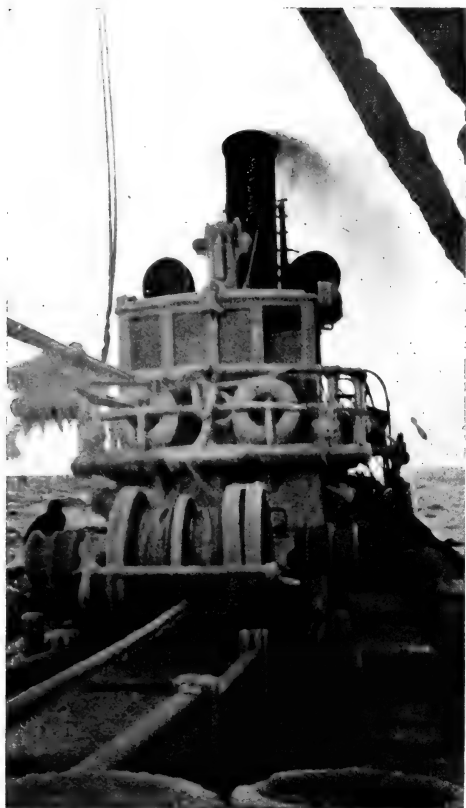
Makers of the Celebrated Goodrich Automobile Tires—
"Best in the Long Run"

The City of Goodrich—
AKRON, OHIO

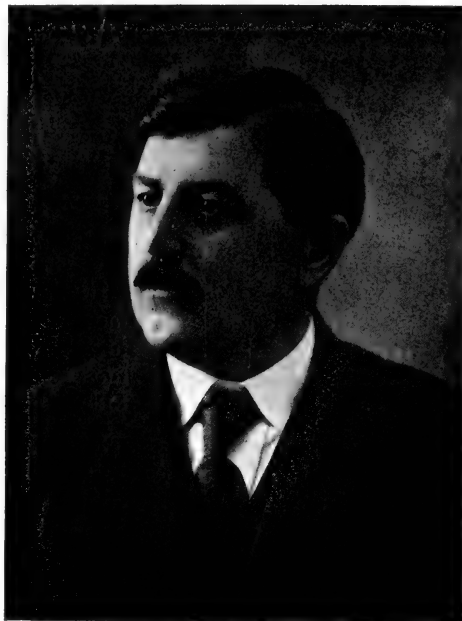


"HI-PRESS"

with the Red Line 'Round the Top
The GOODRICH BOOT
FOR FISHERMEN



Steamship "Triumph" making for Halifax in winter.
Note ice-coated shrouds and decks.



ARTHUR BOUTILIER,
President National Fish Co., Halifax, N.S.,
owner of the "Triumph."

a huge area from Georges Banks to Grand Bank and to protect this great space of water from raiding operations, a vast fleet of submarine chasers and armed vessels would be necessary. The surest protection is to keep the fishing fleet inshore and maintain a strong coastal patrol. To keep up the fish supply, our remaining steam trawlers should be allowed to trawl within bays and the three mile limit.

The trawler "Triumph" is a steel, screw vessel, 125 feet in length, built in England, and formerly owned by the B.C. Fishing Co., Vancouver. In 1916 she was purchased by Messrs. Jennsen and Oleson, who brought her to Halifax via the Panama Canal and sold her to the National Fish Co., Ltd., Halifax. The Lunenburg schooners reported sunk by her to date (Aug. 22nd) are the "Una Saunders" and "Lucille Schnare." The Lockeport schooner "Nelson A." was sunk by a submarine early in August.

Anderson & Woodman have recently erected a smoke house with a capacity of 500 barrels at Digby, N.S. They will operate twelve steam boats. They have a weir at Greenpoint.

Mr. Brown, representative of the Burnoil Engine Co., South Bend, Ind., manufacturers of high grade oil engines, is at present on an extended trip through the Maritime Provinces.



CAPT. GJERT MYHRE,
Captain of the "Triumph."

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

119 Youville Square,

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MONTREAL

I am in the market at all times to Buy or Sell on Commission,
Fresh, Frozen, Smoked and Salt Sea and Lake Fish, in Carload
Lots or Less.

Correspondence Solicited

License No. 1-017

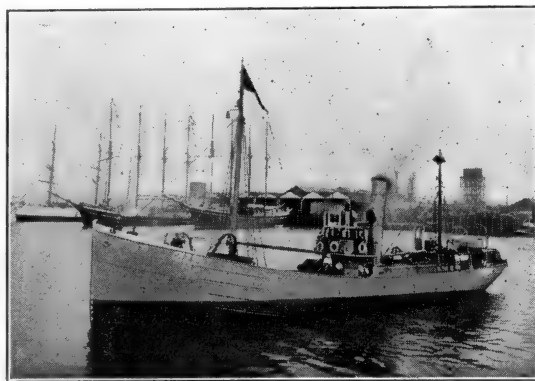
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Halifax and Port Hawkesbury - N. S.

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*Haddies,
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Kippers,
Bloaters,
Scotch Cured
Herring.*



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*Fresh,
Frozen
and Salt
Sea Fish*

STEAM TRAWLER TRIUMPH.

LAKE FISH

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BONELESS COD FISH

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SEA FISH

A. W. Fader, Canso, N.S.

National Fish Co., Ltd., Halifax and Port
Hawkesbury, N.S.

Acadia Gas Engines, Limited, Makes Rapid Progress

Few people realize that there is in Canada a firm manufacturing gas engines which compares favorably in the size of plant, equipment and output, with any other firm on the continent.

Acadia Gas Engines, Limited, Bridgewater, N.S., was founded nine years ago by Mr. W. T. Ritcey, the present president and general manager, and although the beginning was comparatively small, this firm enjoys today the distinction of being the largest manufacturers of two-cycle engines in Canada.

The illustration gives some idea of the size of the plant, but several recently erected buildings are not shown. The factory proper, which is 9 ft. by 32 ft., three stories high, is covered with asbestos slate shingles, equipped with automatic sprinkler systems and elevator.

All castings needed in every department of the business are turned out in the firm's own foundry which occupies floor space 100 ft. by 46 ft.

Every motor before being shipped is tested out under severe conditions in the testing plant for which there is a special department. These tests are very thorough and careful and no engine is shipped unless it stands every test perfectly.

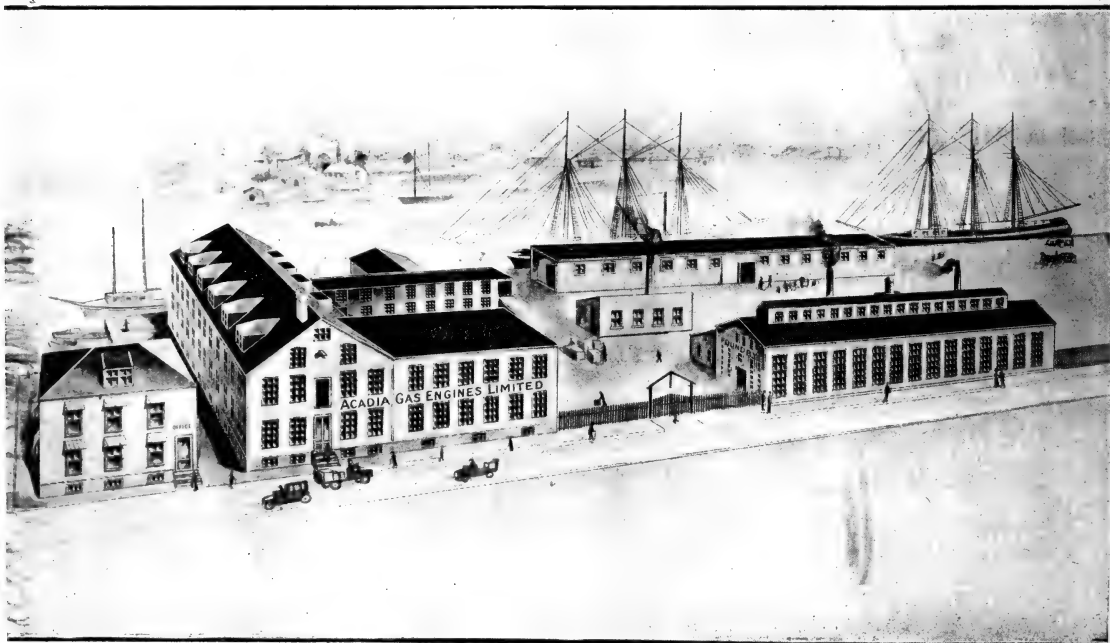
The plant is situated on the bank of the La Havre River, and the firm have a 170-foot pier and a large warehouse, thus giving excellent facilities for discharging and loading shipments.

Acadia engines are particularly well known in Newfoundland where the firm maintains a permanent office and staff of seven employees. In practically every fishing district of Eastern Canada and Labrador are to be found local representatives and in Newfoundland a com-



W. T. RITCEY,
President and General Manager, Acadia
Gas Engines, Ltd.

plete stock of engines and accessories is carried. The first year's sales amounted to less than \$10,000 and next year, if the business continues to increase in the same proportion as it has in the past two years, the total



PLANT OF THE ACADIA GAS ENGINES, LIMITED.

THE success of a FISH FREEZING plant depends on the TYPE of machinery installed, and to insure continued success dependable SERVICE must be available.

'YORK' ICE MACHINES & 'CIMCO' SERVICE

COVER THESE REQUIREMENTS

SOME USERS

New Foundland Atlantic Fisheries, Ltd.,
St. John, Nfld.

Maritime Fish Corporation, Ltd.,
Canso, N.S.

Leonard Fisheries, Ltd.,
Port Hawkesbury, N.S.

Shelbourne Fisheries,
Shelbourne, N.S.

A. E. Hickman & Co.,
St. John, Nfld.

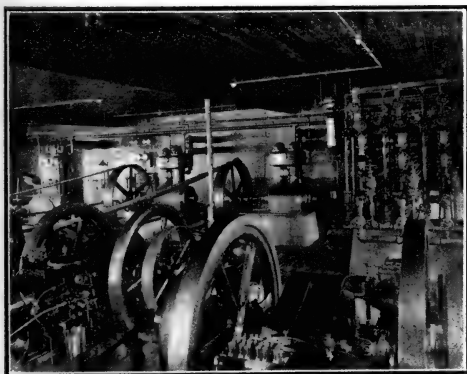
D. Hatton & Co., Ltd.,
Montreal.

National Fish Co., Ltd.,
Port Hawkesbury, N.S.

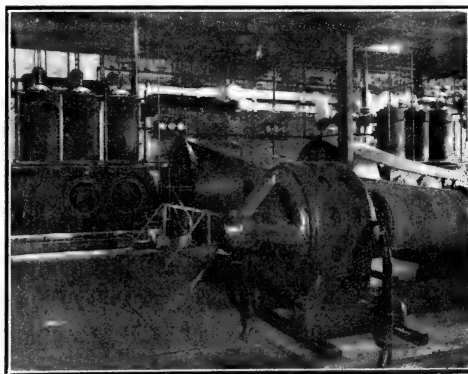
Job Bros. & Co., Ltd.,
St. John, Nfld.

Matthew & McLean,
Souris East, P.E.I.

Stanfords Ltd.,
Montreal.



3 York Ammonia Compr. at National Fish Coy.'s Plant



3 York Ammonia Compr. at Newfoundland Atlantic Fisheries' Plant

CANADIAN ICE MACHINE CO.

LIMITED

WINNIPEG

TORONTO

MONTREAL

sales will reach approximately \$1,000,000, which is the surest proof that Acadia Engines are meeting the needs and requirements of the trade and also to the simplicity and working qualities of the products of manufacturing.

In addition to the manufacturing of internal combustion engines, Acadia Engines Limited, also manufacture power winches for the hoisting of sales and cargo, heaving of anchors, etc., and also handles large quantities of united engines, and it is possible that in the near future new lines will also be added.

CANADIAN FAIRBANKS-MORSE CO., LTD., SUPPLY OIL ENGINES FOR FISHING VESSELS.

Nova Scotia Shipbuilding & Transportation Co., Ltd., Liverpool, N.S., have under construction two large fishing vessels.

One is regular type of fishing vessel, 150 tons net, the other is a specially designed 3-masted schooner, which can be used for South American trade or for bank fishing. This design covers the best ideas in fishing vessels and its dimensions are 132 feet over-all, 26 foot beam, 12 foot hold.

Both vessels are built to accommodate twin 60 H.P. oil burning engines, which we understand are being supplied by the Canadian Fairbanks-Morse Co., Ltd. Both vessels will be completed this fall and are being built on builder's account. Mr. H. A. Frank is managing director of the Nova Scotia Shipbuilding and Transportation Co., Ltd.

Geo. M. Barr, of St. Johns, Newfoundland, producers and exporters of cod fish, are building at Noel, Hants Co., N.S., a three-masted auxiliary schooner of 500 tons net capacity.

Power will be supplied by two 100-H.P. engines, furnished by Canadian Fairbanks-Morse Co., Ltd., St. John. She will be used especially for the European and Brazil salt fish trade.

Capt. S. Courtney has been on the ground in direct supervision of the building, and when she is completed will be in charge.

At Scott's Bay, the same company is building a four-masted vessel of approximately 600 tons net. Power by two 120-H.P. engines. She will be used for the same trade.

PROTECT FISHING BOATS.

Off Coast of New England From Submarines.

Washington, August 21.—Steps to protect the fishing fleets off the coast of New England from German submarine raiders have been taken by the navy. Secretary Daniels has announced that where the vessels operate in fleets, as is the general custom, naval patrol boats hereafter will accompany them to their banks and there may stand guard.

Protection of the fishing fleets was decided upon as a food conservation measure.

The New Burrell-Johnson Co., Ltd., Yarmouth, N.S., have discontinued the manufacture of shells and gone back to their regular line of marine work. They have now under construction two large vessels. Mr. H. S. Crowell is manager.

A full account of the visit of the C.F.A. delegates to the Dartmouth plant of the Consumers Cordage Co., Ltd., during the convention at Halifax will appear in our next issue.

NOTICE!

The attention of those interested in Cod Liver Oil Industry is called to the following sections of the Rules governing same:

18. A certificate of inspection must be produced by the Exporters to the Customs Officer when applying for Export Entry for the exportation of Refined Cod Liver Oil and Non-Freezing Cod Liver Oil, and an inspection fee of one cent per gallon shall be paid to the said officer by the Exporter to be remitted to the Department of Marine and Fisheries at St. John's.

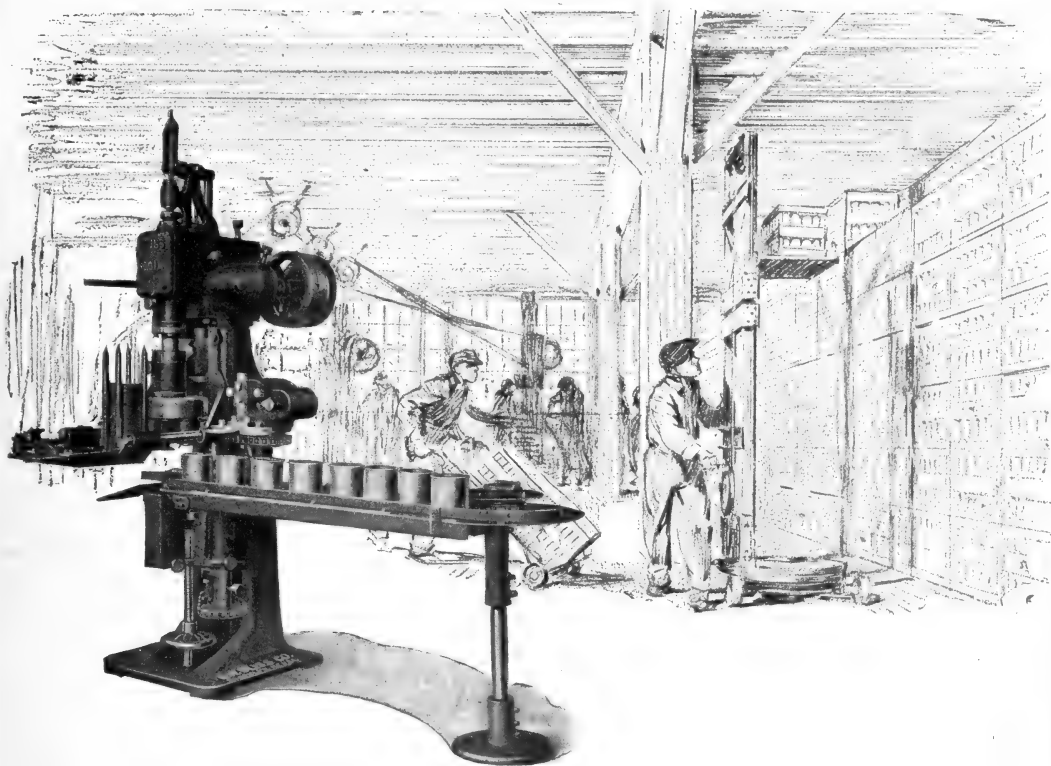
19. Any person who shall not obey the orders of the Inspectors, or who does not carry

out their instructions, shall be deemed guilty of a violation of these Rules and Regulations, and may have his License forthwith cancelled on complaint of said Inspector, or on complaint of any person who may certify that the Instructions or Rules of the Inspectors have not been complied with.

20. No package other than a new oak barrel made especially for Refined Cod Liver Oil, a tinned lined barrel, or a butter oil cask shall be used to contain Refined Cod Liver Oil.

J. G. STONE,

Minister of Marine and Fisheries



SEALING FILLED CANS

When the "speed-up" is at its height and minutes count in the mind of the anxious manager—then is the time when he appreciates "Bliss" Automatic Double Seamers.

The can supply and the operations of packing must flow smoothly and without interruption abreast of each other until the last case has been added to the pack.

"Bliss" Equipment—complete—has been taken to the

far parts of the earth where repairs or replacements would be difficult if not impossible to obtain—and has made good.

"BLISS" AUTOMATIC DOUBLE-SEAMING MACHINE No. 31-K is illustrated, above. For sanitary cans—the cans remaining stationary. May also be used in can shops for double seaming the ends on empty can bodies. Continuous chain feed delivers filled or empty can bodies to the seaming position at uniform speed. Covers fed automatically.

Write for Catalogue Section No. 18-A



1857

E. W. BLISS COMPANY

Main Office and Works; BROOKLYN, N.Y., U.S.A.

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People's Gas Bldg.

DETROIT OFFICE

Dime Bank Bldg.

CLEVELAND OFFICE

Union Bank Bldg.

1917

LONDON, S.E., ENGLAND, Pocock Street, Blackfriars Road

PARIS, FRANCE, 100 Boulevard Victor-Hugo St. Quen



Billingsgate Market

London, July 6th 1918.

To-day has seen the close of a thoroughly unsatisfactory week's trading. The weather throughout the week has been unusually hot, with the result that very little fish has reached the consuming centres in really choice condition. Then again there has been quite a glut of herrings, while several varieties of trawled fish, especially deep-sea cod and haddocks, have been available in substantial quantities, and salmon, after a season characterized by scarcity, has come forward much more freely. The heat has checked demand, with the result that fishmongers have not been inclined to purchase beyond their bare requirements, while they have scarcely looked at secondary qualities. As a result prices have come down with a crash more or less generally; for instance, salmon, soles, turbot, brills and other of the choicer kinds, which have remained practically fixed at the maximum level since the enactment of the Fish (Prices) Order, have sold daily at rates below the schedule, while other varieties have changed hands at all manner of prices, while it has been practically impossible to obtain an offer for herrings, especially "sprinkled", i.e., herrings treated with a light application of fishery salt to assist in the preservation while being transported. The outcome of this state of affairs has been that quantities have been left unsold on the principal markets in the consuming centres day after day, and this has had the effect of depressing the value of newly-arrived consignments the next day. In fact, to sum up, it may be said that the markets have presented all the familiar features of midsummer in this country, with the addition that owing to labor shortage railway transport is very tedious and unreliable, while when the fish has ultimately reached the distributing markets there has been insufficient labor to handle it expeditiously.

Billingsgate, July 13th 1918.

This week closes with the markets in a much healthier condition than was the case a week ago. With the exception of a few kinds, notably "chats" haddocks, supplies all round this week have shown a falling off, this being mainly due to boisterous weather at sea, and as the weather since about Tuesday has been much cooler, the fish has been reaching the consuming centres in much better condition. Prices have not fully recovered from last week's decline, but during the past day or two really choice qualities of many kinds have commanded the maximum rates. The feature of the catches landed at the East Coast ports has been the abundance of small fish, mostly haddocks and whittings, which have been cleared with difficulty. At the West Coast ports hake has been pretty prominent, while deep-sea fish has also been forward at Fleetwood. Supplies of herrings have continued in excess of requirements, with the markets much depressed, and kippers have been more plentiful, and much cheaper, than for some considerable time. Fewer mackerel have been available; "first day" mackerel, that is, mackerel reaching Bil-

lingsgate the same date as it landed at the ports on the South East coast, which was coming in rather freely, and was greatly appreciated by the trade, has quite stopped, rough weather resulting in the nets being removed until conditions at sea improve — and by that time the fish may have "taken off"!

Salmon, and more especially grilse, have continued to come in more freely from home waters, and thus for the time being there is little call for frozen salmon. However, the season for native salmon will speedily begin to wane, which will at once give an impetus to the sale of frozen salmon.

London, July 20th 1918.

Taking the week as a whole, supplies generally since the last report have been on rather a limited scale, and with an abundance of "chat" haddocks, the quantity of other kinds of trawled fish available has been even lighter than the total weight of the landings would indicate. The only arrivals from the Icelandic grounds this week has been at Fleetwood. The result of the shortage has been that competition has been keen throughout and all sizeable fish in choice condition have readily commanded the maximum prices permitted under the Fish (Prices) Order. Landings of herrings have varied from day to day at the different ports from which this fishing is now being prosecuted, and with anything like generous catches prices have immediately dropped below schedule rates. Kippers too have failed in value in sympathy. Curious as it may seem with the general shortage in landings, some kinds of prime fish, more especially soles and brills, have been obtainable on most days under maximum rates. Turbot on the other hand, which have been most prominent in the arrivals of prime fish at both Grimsby and Hull have usually commanded the full value.

The main reason of the shortage has been boisterous weather, conditions having been unsettled for the time of the year throughout the week. At the same time, the atmosphere has been very heavy and humid, and anything but conducive to the keeping of fish in prime condition. At the moment inquiry for Canadian frozen fish is practically dormant. However, with the waning season for home-caught salmon, there has been rather more demand for frozen salmon.

London, July 29th 1918.

Supplies have been gradually shortening since the last report until today there was a marked shortage in most kinds. "Chat" haddocks have predominated on most days, while there has been quite a scarcity of long fish. Chats have been almost a drug on some days and values have fallen to a ridiculous level at the distributing centres, sales being made with difficulty at as low a level as 2/- per stone, a rate much below cost at the ports where the fish were landed.

Herrings have been abundant on most days, and in

ECONOMY AND CONSERVATION

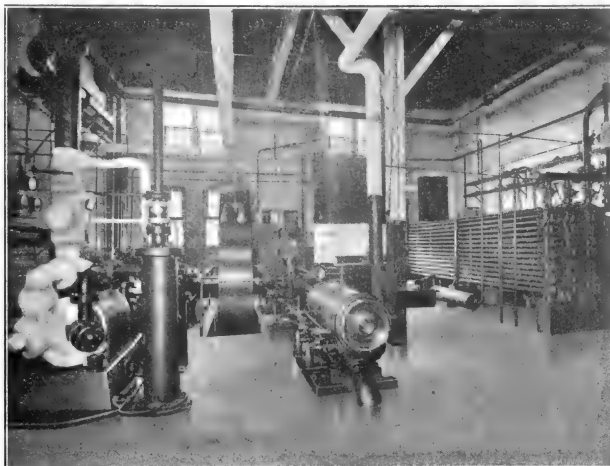
Are the watch words of to-day—True economy in fish plants can only be maintained by the installation of machinery that will conserve power and maintenance cost, yet give the most efficient results.

Ask at the Largest
Fish Plants in
Canada.

Their success is due
to the above facts, all
of which are em-
bodied in

LINDE

MADE
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CANADA
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Your requirements
will be given
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of careful study
of the
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PLANTS
DESIGNED
AND ERECTED

THE STANDARD REFRIGERATING MACHINE

THE LINDE CANADIAN REFRIGERATION CO., LIMITED

37 ST. PETER ST., MONTREAL, P.Q.

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TOWER'S WATERPROOF CLOTHING



FISH BRAND SHIELD BRAND

"COMPLETE PROTECTION FOR
EVERY MAN AT EVERY JOB."

BEST FOR FISHERMAN

COAST TO COAST SERVICE.

Tower Canadian Limited

Vancouver

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EUREKA ODORLESS FISH CABINET

(SCIENTIFIC IN CONSTRUCTION AND OPERATION)

All odors are absorbed in the cold water held under the ice.

No permanent drain connection is required. The water need only be drawn off when necessary.

It is well insulated, economical on ice and being equipped with ball-bearing castors can be moved from place to place as required.

Made in different sizes.

Write for Catalog.

Eureka Refrigerator Co., Limited, **TORONTO, ONTARIO**
11 Colborne Street

excess of the demand and with corresponding increase in the quantity of kippers available values have weakened appreciably, and it has been possible most days to purchase kippers well below the maximum rate fixed by the Fish (Prices) Order.

Although the supplies of trawled fish have been comparatively limited, demand has not been really fast. Very heavy rain day after day has spoilt the retail trade, whilst the close thunder weather prevailing, combined with transit delays, has not tended to improve the quality of the fish. Best qualities of most kinds have readily found purchasers at schedule figures, but salesmen have needed all their eloquence to effect sales of second grades.

With supplies of native caught salmon rapidly shortening with the approach of the close season for salmon fishing there has been much more enquiry for frozen salmon, and rates have ruled firm at the maximum wholesale figure of 25c per stone. Exporters should make every effort to secure freight for frozen salmon during the next few weeks. All things considered there is still a very fair sale for other varieties of Canadian frozen fish.

Billingsgate, London,
August 3rd, 1918.

Liberal supplies have been available throughout the past week, but much of the fish has been of secondary quality only by the time it has reached the markets in the distributing centres. As an indication of the quantities available it may be stated that the daily return at Billingsgate this week has been well over 600 tons; of course, this is the aggregate delivery of all kinds. Fish from Iceland and other deep-sea areas has been much in evidence and the greater part of this class has gone out at very low prices; in fact, small haddocks ("chats") and undersized whiting have changed hands at almost every figure offered, while most kinds, except one or two of the choicest varieties in demand for holiday requirements, have been obtainable below schedule rates.

A combination of factors has tended to depress the markets this week, in the first place, August is usually an unsatisfactory trading month, owing to the great holiday exodus from the cities and towns, and this

A. E. HALLETT,

BROKER

FRESH AND FROZEN FISH

Correspondence solicited

Ref., Corn Exchange National Bank, or any Chicago wholesale fish concern.

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desiring to know more about the

"Henderson Fish Preserving Process,"

which is patented in Canada and other
countries, should communicate with

GEORGE HENDERSON

Box 2449, G. P. O.

SYDNEY, AUSTRALIA

year there appears to be a greater number of folk seeking rest and change at this season of the year than in previous corresponding periods of the war-time summers. Then the weather has been very unfavorable to fish, heavy rain and thunderstorms alternating with sultry, thundery weather. On top of this the delays while the fish has been in transit on the railways have been exceptional, and drastic action is called for to speed-up transport. Finally, there is little doubt that the maximum prices, which tend to become the minimum with "all controlled" articles, have been scheduled and too high a level for the summer months. To sum up, trading has been carried on at unremunerative rates, and with great difficulty. The labor shortage is now acute, delaying the despatch of supplies, and for the same reason much difficulty has been experienced in securing the necessary ice for preserving purposes.

Herrings are now abundant, and kippers correspondingly so. This week, also, comparatively good supplies of mackerel have come from Scotch fishing stations.

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

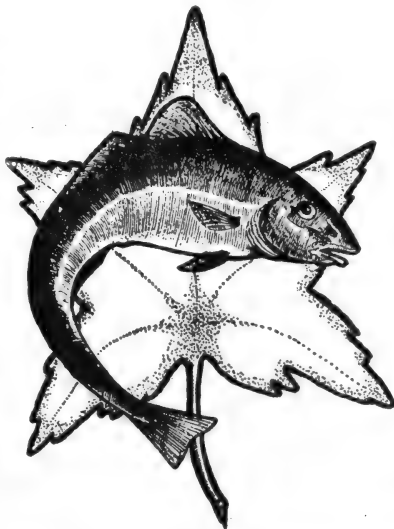
F. WILLIAM WALLACE
EDITOR

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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, SEPTEMBER, 1918

No. 9

THE SUBMARINE MENACE.

The ravages of German submarines and the raider "Triumph" among our North Atlantic fishing fleets has happily eased off. This may be accounted for in the fact that all of the salt bank fleet promptly made for port and most fishing craft kept the shore handy or fished in sheltered waters. Cruising around looking for victims in deserted waters is neither pleasurable or profitable for the Huns and they have probably moved south to watch for convoys or coasting craft.

A large number of American, Canadian and Newfoundland craft were sent to the bottom by the under-sea-boats, and while the destruction of ships has not been serious enough to affect the fish supply, yet the driving of fishing craft from the Banks has caused some little scarcity in fresh fish lines. This, however, in Canada, is coming back to normal again, though prices are higher. This is only natural as fishermen and owners expect some premium for the risks taken.

Canada lost a large fish producer in the trawler "Triumph," but we understand this vessel will be replaced shortly by a new trawler for the same owners. No lives were lost in any of the Canadian craft sunk, but this is not due to any outcrop of humanitarianism on the part of the U-boat crews—attempts to escape or avoid capture would have been ruthlessly suppressed by gun-fire. Then again, our practice of fishing in dories gave our fishermen better chances to make the land in these boats in rough water rather than in the small yawls and life-boats of the British fishermen — many of whom were lost through being swamped in over-crowded boats. The light, easily stowed, and sea-worthy fishermen's dory is undoubtedly the best life boat for small craft.

CANADA'S FISHERIES FOR 1917.

Under a new system, the statistical period of the Federal Fisheries Department will hereafter run from January 1st to December 31st, instead of from March 31st to March 31st. The new system is much more satisfactory and more in line with the orthodox run of yearly statistics. From figures furnished by the Fisheries Department, we find that Canada's fisheries totalled \$52,352,044 in value for the twelve months ending December 31st, 1917. This is a substantial increase in value over the statistical year previous, but comparisons cannot easily be made as three months of the previous statistical year are included in the 1917 figures, and we also assume that the price units upon which the values are based have been raised.

British Columbia, as heretofore, leads the other provinces in value of fisheries with a total of \$21,558,595. Nova Scotia comes second with \$14,468,319. New Brunswick is third with \$6,143,088. The other provinces are as follows: Quebec, \$3,414,378; Ontario, \$2,866,419; Prince Edward Island, \$1,786,310; Manitoba, \$1,543,288; Saskatchewan, \$320,238; Alberta, \$184,009; Yukon, \$67,400.

Of the fish caught, salmon leads as usual with a total value of 17,411,029. Cod is second with 7,402,516. Lobsters are third with 5,654,025. Herring is valued at \$3,733,688. Halibut, \$2,066,635. Haddock is ahead of halibut with a value of \$2,936,719. Other important species are valued as follows: Sardines, \$1,910,705; Mackerel, \$1,333,354; Whitefish, \$1,248,006; Smelts, \$1,027,555.

Black Cod (Sablefish) amounted to \$879,404 in value. Albacore, \$81,961—practically all used in a fresh state. This fishery is capable of greater development on our Atlantic Coast. Scallops to the value of \$26,800 were

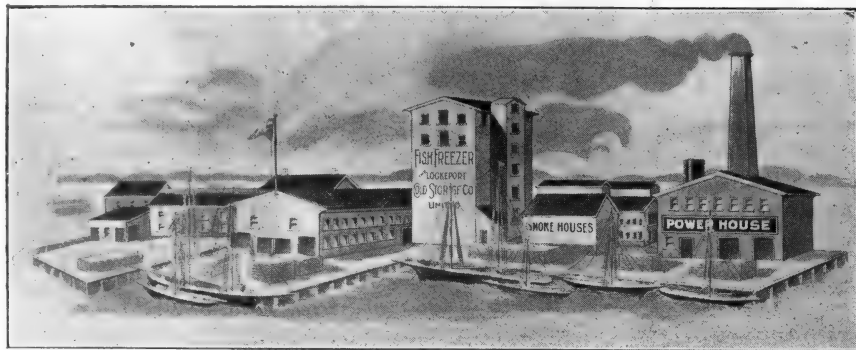
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Lockeport Cold Storage Co.

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W. M. Hodge. President.



PRODUCER

Live Shore Ocean Fish

Fresh



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Cod - Haddock - Herring - Mackerel

--- Smoked ---

Fillets - Haddies - Kippers - Bloaters

Car lots a Specialty.

Plant, Smoke house and Freezer,

LOCKEPORT, Nova Scotia.

marketed. Swordfish, \$33,178. Trout and pickerel, next to whitefish, came highest in value of our fresh water fish, being \$699,950 and \$650,632 respectively.

A large number of the fish scarcely marketed at present will undoubtedly come to the fore as years go by while others, such as halibut, will decrease. Fifty-two millions is a respectable figure, but now we want to see it valued at one hundred millions. How long will it take us to reach that figure? If we utilize our fishery resources as we should and endeavor to build up a big export market that figure should not be far off. The expenses of the War has got to be paid for out of our natural resources and our fisheries is one that is capable of enormous development.

UNITED STATES TO INCREASE FISH PRODUCTION.

A huge effort to increase the production of fish in the United States will be made through the efforts of the U. S. Food Administration. Plans are being made to construct, through the Emergency Fleet Corporation of the U. S. Shipping Board, some fifty to seventy-five steam trawlers for use on the Atlantic, Pacific and Gulf Coasts.

The catch of these vessels is primarily to supply the markets of the middle and western states with sea-fish which they cannot secure in sufficient quantities at the present time. It is expected that the first trawlers will be ready by March and April of 1919. Though built by Government appropriation, it is expected that arrangements will be made with fish producers to operate and handle the catches, and the railroads will co-operate with the Food Administration in providing the necessary transportation facilities to inland centres. Surplus catches will be salted rather than placed in cold storage as it is expected that sufficient fish will be coming in to keep the markets filled with fresh fish.

With such an ambitious programme, this side of the Atlantic will begin to rival the European seas with trawler fleets and present indications point to the end of the schooner and dory method as a big factor in fish production.

OUR FISHERIES AND THE RAILROADS.

An interesting article in next issue by Colin McKay describes the work of British railroad companies in building up the fishing industries of Great Britain. They constructed docks, warehouses, coaling piers and railway sidings for the benefit of fishing craft and producing companies and further encouraged the business by providing almost unlimited transportation to markets. The great fishing ports of Grimsby and Fleetwood were built up in this manner by the Great Central and Lancashire and Yorkshire Railways.

Our own Canadian railroads might well take a leaf out of the Britisher's book and pay more than passing attention to the development of our fishing industry. The grain growers of the West have been catered to lavishly in the form of elevators, spur lines and sidings and this attention has been eminently successful in every way. Why not cater to the fishing industry in the same way? The Grand Trunk Pacific Railway have paralleled Grimsby and Fleetwood somewhat in their development of Prince Rupert as a fishing port, but this is the only effort in that line made by a Canadian railway. Our fishing ports have been built up

by private firms who built their own docks, warehouses, storages, etc. The most the railroads have done is to provide sidings, furnish cars when requested and improve transportation to inland centres only when implored to do so.

It should not be thus. We should not have to run after the railroad officials with our hats in our hands asking for service which they should provide without abject solicitations on our part. A live organization should be keen to tap and develop every source of transportation revenue and should do their part to build up the industry—in fact, the railroads can do more to develop our fisheries than any other factor.

All the big roads in this country tap important fishing centres and carry fish, but what have they done on their own initiative to develop the industry? It would pay our railroads to send officials around our fishing ports to see what they could do to assist the fisheries. When this is done, we too, may have our Grimsbys and Fleetwoods.

VANCOUVER READY TO WELCOME THE C. F. A.

Acting-Secretary J. J. Harpell has returned from Vancouver and reports great interest in the suggestion that the next C.F.A. Convention be held there. A full record of the Pacific Coast meeting is published in this issue.

Editorially, we hope the Convention will be held in Vancouver next week. The time is ripe when East and West should meet, and we venture to predict that much good to the industry will result—not alone from a social standpoint, but from the fact that we will be able to get together on matters which vitally affect the fisheries as a whole.

There is no doubt but what we will receive a royal welcome from our Pacific Coast friends. A good many of our eastern fishermen have never visited the Pacific Coast and the Convention would be an ideal means of combining business with pleasure for them. Of course, the ladies would be invited. That precedent was firmly established in the Halifax Convention and is on the books for all time. The most pessimistic will admit that the presence of the fair sex was responsible for the enthusiastic and pleasant time we had at Halifax.

The matter will be definitely decided at the next meeting of the Executive Council and as soon as the date is set, preparations will be made at once to make the next Convention the best ever.

AMERICAN TRAWLER SUNK BY U-BOAT.

The American wooden steam trawler "Kingfisher" owned by the East Coast Fisheries Co., Ltd., of Boston, on Sept. 20th was overhauled by a German submarine off the Nova Scotia coast while bound for the fishing grounds and presumably destroyed by bombs.

The "Kingfisher" was one of the largest trawlers operating on this side of the Atlantic, and was launched about a year ago. Captain J. R. O'Reilly and the crew made the land safely. This is the first American trawler to be a U-boat victim.

LIVERPOOL, N.S., COLD STORAGE READY SOON.

The plant of the North American Fisheries & Cold Storage Co., Ltd., at Liverpool, N.S., is almost completed. The daily capacity of the plant will be about 100,000 lbs. with a total storage capacity of 6,000,000 lbs. William Fellowes Morgan, Jr., of New York, is President and Edward J. Murphy is general manager.



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"FISH IS THE ONLY READILY AVAILABLE SUBSTITUTE FOR THE MEATS SO URGENTLY REQUIRED FOR THE SOLDIERS AND CIVILIAN ALLIES OVERSEAS"—*Henry B. Thomson.*

FISH CHEAPER HERE THAN IN UNITED STATES

Abundant Supply of Ocean Fish at Moderate Prices in Canadian Cities.

The people of Canada too often fail to realize and to take advantage of the tremendous advantage which they have over the people of the United States in regard to the abundant supply of ocean fish at moderate prices. Comparison of retail fish prices in several of the principal cities in this country with those prevailing in cities similarly situated in the United States shows in a striking way what has been accomplished in the Dominion, through the efforts of the Canada Food Board in co-operation with the Department of the Naval Service and the fish trade to make splendid sea fish available to the consuming public at moderate prices. The Canada Food Board just made such a comparison, the prices being those secured through the Board of Trade in each of the cities on the list and being representative retail prices on a recent Friday.

It will be noted that in nearly every case the Canadian price is lower and in many instances much lower than the American. This is especially true of the more moderately-priced fish, while the prices of the "lux-

ury" fish, salmon and halibut, are high on both sides of the International boundary.

Enquiry was made at Halifax and Gloucester, as these are among the principal points at which Atlantic fish are landed for shipment to the interior. The cause for the discrepancy in price is that at Gloucester and Boston dealers are unable to secure sufficient quantities of live shore fish to supply the demand, while at Halifax and nearby points, which is several hundred miles nearer the fishing banks, an ample supply is landed.

Cod and flounders and sole from the Pacific have been made available at points in Western Canada as far east as Winnipeg, at prices ranging from 11 to 15 cents per pound, while at St. Paul, Minn., practically nothing is known of these fish. Seattle is the only city on the list at which any fish is offered at a lower figure than in Canada, the fish in question being flounders and sole. The reason is that no market has been established in the Western States for these fish and they are not in demand.

Following are the prices as given by the Canadian Food Bulletin:

	Cod.	Haddock.	Flounders.	Sole.	Halibut.	Salmon.	Whitefish.	Herring.	Trout.	Pickarel.
	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts. doz.	cts.	cts.
Halifax	8	8	8	None	20	30	15	25	None	None
Gloucester, Mass.	16	18	35	30	35	38	None	None	None	None
Montreal*	9 & 10	9 & 10	15	15 & 18	30 & 32	35	20 & 22	7 & 10	22	23
New York	23-27 (Steaks)	16-18 (Big)	15-21	None	25-29 (West)	25-37 (West)	30-38	19-23 (Lake Erie)	..	..
	16-18 (Whole)	14-16 (Med.)	....	....	29-33 (East)	40-45 (East)	....	13-16 (Shad)	22	11-14 (French)
Ottawa	10	11	10	10	30	35	15	10	20	18
Washington, D. C.	18	12	12½	15	30-40	30	None	None	15-20	None
Toronto	10 & 11	10-12	None	None	29 & 30	30-33	15-18	12-14	18-20	18-20
Buffalo, N.Y.	20-25	15-16	20	20	30-32	35	25	None	25-26	None
Winnipeg	12½-15	12½-15	11	11	28-35	32-35	15-17	6-10	14-18	12½-15
St. Paul, Minn.	None	None	None	None	25	26	19	9	23	13
Vancouver	12½	20	9	9	25	25	18	15	18	None
Vancouver (Municip. Mkt.)	5	None	5	5	15	None	None	2	None	None
Seattle	15	None	6	6	22	20-22	None	None	25	None

*Montreal quotations are on a cash-and-carry basis.

The consumption of Atlantic fish in Ontario for the first six months of 1918 was 500 per cent over that of last year. In the western provinces the consumption of Pacific fish has also been vastly increased since the war, but Canadian fish consumption is still far short of the one pound per week standard recommended by the Canada Food Board in order to conserve meat supplies.

STEAM TRAWLING OUT OF VANCOUVER.

Mr. A. L. Hager, of the Canadian Fishing Company, Ltd., Vancouver, advises us that his steam trawler, "Imbricaria," is now trawling for cod and flat-fish and is operating successfully. Mr. Hager recently received a shipment of complete trawl equipment from England and is prepared to fit out others of his steamers should conditions warrant.

Fisheries Exhibit at the Canadian National Exhibition

Canada's fishing industry was well represented at the Canadian National Exhibition, Toronto, during the period from August 26th to September 7th, by the joint exhibit of the Canada Food Board, Canadian Fisheries Association and the Ontario Government Fisheries. Previous years, the fish exhibit was conducted under the auspices of the Marine & Fisheries Department, but this year, owing to the lack of necessary appropriations, the show was turned over to the Canada Food Board who enlisted the Canadian Fisheries Association and the Ontario Government Fisheries in making up the exhibit.

In spite of the fact that there was only a short time left in which to plan the booths and gather the exhibits of fish, etc., Capt. F. W. Wallace, of the Food Board, who was in charge of the fish show, succeeded, with the aid of the Fisheries Association members and Mr. S. L. Squires of the Ontario Government Fisheries, in getting a first class exhibit together and one which excited a great deal of interest. Owing to the prominence of fish as a food nowadays, the public took more interest in the exhibits and the booths were usually crowded.

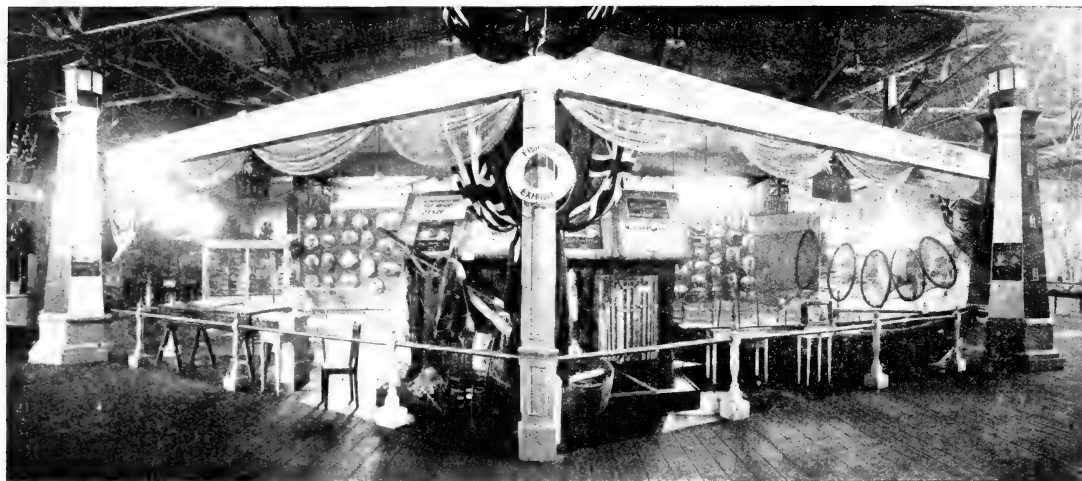
The refrigerator show rooms held exhibits of At-

lantic and Pacific fish contributed by members of the Association, and also lake fish from the Ontario Government fisheries. The Canadian Ice Machine Company, Ltd., of Toronto, operated the freezing plant free of charge for 16 days and materially reduced the expenses of the exhibit to the Association.

In addition to the frozen fish of all kinds shown in the refrigerator rooms, there was a display of smoked and cured varieties in refrigerator show cases and also a section devoted to fresh sea and lake fish on ice which was changed daily. A large booth was dressed with samples of Canada's canned fish which included everything packed on either coast. The main stall, at which literature and cook books were distributed, had two lighthouses at each end. A fisherman's shack, artistically built of pine slabs, occupied the centre of the stall. On the walls of the shack, lobster traps, dory-sails, oars, buoys, nets, etc., were hung. The roof was used to display fish posters specially prepared for the occasion.

In this booth was exhibited a dory from the Gloucester schooner "A. Piatt Andrew," in which the crew rowed and sailed 55 miles to Canso after their vessel had been destroyed by the raider-trlawler "Triumph."





President Brittain, of the C. F. A., secured this dory at Canso and had it shipped up to the Exhibition. Needless to state, it was a great centre of attraction and brought a big crowd to the Fish Exhibit. For two days, this craft was loaned to the Toronto Navy League and was used in collecting money for the League's Seamen's Fund. Pound nets, hoop nets, gill-nets, photos, and an unusual model of a submarine raid on an East Coast fishing port were among the other attractions of the stall.

Capt. Wallace, of the Food Board, was in attendance at the Exhibition throughout the period: Mr. Squires and Mr. Miller represented the Ontario Government Fisheries, while Mr. H. W. Thompson, Western representative of the CANADIAN FISHERMAN looked after the interests of the Canadian Fisheries Association and remained around the exhibit daily during the two weeks. Through the efforts of these gentlemen, no fewer than 7,000 copies of the Canada Food Board's Cook Books were sold to the public at the Fish Exhibit.

Fish received much publicity in other ways at the Exhibition. In the Patriotic Food Show of the Canada Food Board, fish as a meat substitute was given great prominence in a practical manner by the Domestic Science experts there. Fish was cooked and prepared before the eyes of the public and the preparation of tasty and economical fish dishes were daily demonstrated. The motion picture films of the Canada Food Board, taken at sea on Atlantic and Pacific trawlers, under Capt. Wallace's direction, were also shown daily at the Food Show along with the excellent



MR. H. W. THOMPSON



fish films of the Ontario Government and over 53,000 persons saw these pictures. A large number of fish cook books were sold in the Food Show booths and fish was prominently displayed in the stalls of T. Eaton Co., Simpsons, Maritime Fish Corporation, Ltd., and others.

Under the auspices of the Marine and Fisheries Department, a Fish Restaurant was operated in the Exhibition Grand Stand. At this restaurant a full course meal could be had for 35 cents and the number who took advantage of the fish meals ran into the tens of thousands.

The attendance at the Exhibition just fell short of the million by some forty thousand — for a war year an excellent figure. In so far as fish is concerned, the exhibits and publicity were the best and most satisfactory since the exhibition was inaugurated. Next year, it is to be hoped that a Government appropriation will be forthcoming to make the Fisheries Exhibit more extensive and worthy of the great industry it should represent.

REPORT ON THE SOCKEYE SITUATION.

In the recent report to Hon. William Sloan, Commissioner of Fisheries for British Columbia, Mr. J. P. Babcock, confirms his statements published in the June issue of the CANADIAN FISHERMAN, respecting the present and future of the sockeye in the Fraser River. The report is based upon four weeks' inspection of the spawning grounds of the Fraser River basin and is as follows:—

"The Fraser is fished out. Conditions this year are even worse than they have been. None of the great lakes like Quesnel, Chilco, Seton and Anderson, Shuswap and Adams have any brood sockeye. Lillooet Lake, at the head of the Harrison Lake section, is the only one that has any number of spawn fish, and the run there will not equal those that spawned there four years ago."

Less than a dozen sockeye had reached Quesnel Lake up to September 5. The run in the Chilcotin River has been the smallest ever known there. The Indians have taken less than 1000. No sockeye had reached Seton-Anderson lakes on September 9 or Shuswap-Adams lakes up to the 10th.

Smallest in Canyon.

The run of sockeye through the Fraser Canyon, above Yale, has been the smallest ever observed there. Indian fishermen there have taken not to exceed 1,500 sockeyes this year; those at Bridge River Canyon less than three hundred, and those at Chimney Creek and Soda Creek less than one hundred each. It is still too early to judge of the number that will spawn in the lower section of the Fraser. There is, however, no prospect that they will reach such proportions as to produce a run of commercial importance four years hence.

The unseeded spawning beds of the Fraser, together with the fact that not a cannery on the Fraser River or on Puget Sound paid operating expenses on sockeye this year, gives emphasis to the statements that commissioner Sloan expressed at the meeting of the International Fisheries Conference last spring, when he advocated suspending all fishing for sockeye in the Fraser district in British Columbia, and Washington, for such a period of time as was necessary to restore the run.

The following is Hon. Mr. Sloan's comment on Mr. Babcock's report:

"There is no question of doubt but that the sockeye run to the Fraser has been so depleted that fishing can no longer be conducted at a profit to either the fishermen or the canners. The combined catch of sockeye this year in Canadian and United States water of the Fraser district did not produce 70,000 cases. The watershed of the Fraser will, when adequately seeded, produce more sockeye salmon than any watershed known. In 1913 it produced 2,300,000 cases of sockeye. In the three following lean years it produced an average of but 267,000 cases per year. The catch of 1918, the first of the three lean years in the present cycle, has dropped to less than 70,000 cases, and now we know that there are no sockeye on the spawning beds this year. There is no getting away from such evidence, the fishery of the Fraser is in a precarious condition. It can not be restored without drastic measures. It cannot be restored by halfway measures. If this is not now recognized on the American side, it must be before very long. I have not yet been advised what the Canadian-American Commission, that took evidence here last spring, have determined upon. I understand they have reached a conclusion and signed a report, but I am not informed as to its character. The questions involved are international in character, and not provincial or state questions. They should be dealt with upon broad national lines, and in the interest of the people of Canada and the United States."

(Note:—Latest reports from the hatcheries indicate that Mr. Babcock's prediction is correct. A fair number of sockeye have shown up at Lillooet Lake, but conditions are far from encouraging.)

NOTES ON SEA FISHING RESULTS FOR AUGUST.

The value of sea fish in first hands, caught during August, amounted to \$4,260,388. This exceeds the value for the same month last year by \$139,117. The quantity of cod, haddock and hake landed on the Atlantic coast, however, was 66,063 cwts. less. Herring and mackerel, on the other hand, were caught in greater quantities; the former by 52,166 cwts. and the latter by 12,495 cwts.

Fishing operations on the Atlantic coast were interfered with to a considerable extent during the month, by the presence of an enemy submarine. Unfortunately, nine Lunenburg county vessels, valued at \$264,000 with fish valued at \$136,000 also one Yarmouth vessel, with a good catch of fish on board, were sunk. Notwithstanding this great loss, the quantity of cod landed by the Lunenburg fleet was only 4,800 cwts. less than that landed in August last year. The main falling off in the landings of these fish was in New Brunswick and Quebec, where both fish and bait were scarce.

Lobster fishing continued until the 10th of August in a section of Northumberland Strait, and the total pack, since the opening of the season, in November last, was 101,967 cases and the shipment in shell 53,612 cwts. Last year the total pack was 181,227 cases and the shipment in shell 70,321 cwts., but fishing continued till September 10th, along the southern part of the Gulf from Antigonish country to Gaspe, including Prince Edward Island. In the preceding year (1916), with fishing ended at the usual time, August 10th, the pack was 188,545 cases and the shipment in shell 94,409 cwts.

British Columbia Bids for 1919 C.F.A. Convention

British Columbia fishing interests intend to see the next annual convention of the Canadian Fisheries Association held in that province. This was fully demonstrated at a dinner given in honor of Mr. J. J. Harpell, by the British Columbia branches at the Vancouver Hotel, Vancouver, B.C., Wednesday, September 4th. The Mayor of Vancouver, personally extended the invitation of the city. Mr. A. L. Hager, First Vice-President of the Association and Chairman of the Vancouver branch, ably presided over a representative gathering, and in asking Mr. Harpell to convey the invitation to the Executive Council, took occasion to remind his hearers that in the event of Vancouver being fortunate enough to secure the convention, it would "have an opportunity of welcoming people who would not be mere convention delegates, but rather guests of the right sort who would be accompanied by their wives and families and deserving of the best that we can give them."

Mr. HARPELL, in the course of an interesting address, pointed out that the fishing industry was one of the last of the leading industries of Canada to realize the great value of organization. He brought home to the local fishermen the international importance of the fishery resources of the Pacific Coast, as being one of the four great fishing grounds of the world.

Enlarging on the importance of the fisheries, Mr. Harpell regretted that literature touching upon this most important industry was scarce in most Canadian libraries. He urged that a policy of education of the people be carried forward as to the importance of fish products, and in this connection expressed the hope that the University of British Columbia would in course of time develop a strong department devoted to the study of the subject.

While paying a tribute to Dr. Fraser of the Dominion Biological service for the valuable work he was doing, he stated that he was only one man of the many that should be conducting very needed research work.

He touched briefly upon the transportation question in relation to fisheries, and the need of conservation, and urged British Columbia fishing interests to keep up the good work of spreading abroad the very valuable information which has been going out encouraging the more extensive use of marine products for food purposes.

Dr. McLEAN FRASER, Dominion Biological expert at Departure Bay, B.C., mentioned that it was fifteen years since he arrived in British Columbia to teach science at Nelson, and while he recognized the need for development work in the fishing industry then, that need still existed to-day. He said three-quarters of the population of British Columbia lived but a short distance from the sea, yet ninety-five per cent of the people could not tell one species of salmon from the other.

He urged that British Columbia should make an inducement to young men to take up the technical study of the industry. The study of zoology he said had been practically wholly neglected in this province, though there was no more interesting field in the world for the study of this science than offered by British Columbia.

PROFESSOR HUTCHINSON, of the University of British Columbia, spoke briefly, expressing on behalf of the university the interest of that institution in the welfare of the fishing industry.

He said there were feeding grounds for fish just as there were grazing grounds for cattle, and steps should be taken to ascertain where these feeding grounds were and this knowledge imparted to the fishing industry.

COL. F. H. CUNNINGHAM, chief inspector of fisheries under the federal government, had much to say of general news interest, as well as of purely trade interest. While the run of sockeye on the Fraser had this year been a failure, the abundance of fish produced in the Skeena and northern waters had compensated for the shortage in the south.

"The cannery on the Fraser River are now anxious to remove their plants to Northern British Columbia," said Mr. Cunningham, "and we don't know what we are going to do about it."

Col. Cunningham charged that the depletion of the sockeye in the Fraser was largely due to the work of fishing interests on Puget Sound. It was significant that the pack on Puget Sound would run 40,000 cases this year, while that on this side would run but 10,000.

Discussing the question of technical education in its relation to the fishing industry, Col. Cunningham pointed out that until the government revised civil service salaries so as to allow a technical man adequate pay for his services, young men would naturally pass up the study of such subjects as fish and marine life.

Mr. F. E. BURKE of the Wallace Fisheries, was delighted at the prospect of Vancouver securing the 1919 convention of the Canadian Fisheries Association. He said that Eastern fishermen had not made a habit of visiting this coast, and he believed that the local fishermen were likely to gain a vast amount of valuable information, if such a convention were held here.

He pointed out that there were only about four or five standard kinds of fish handled by the industry on this coast, and said that many of the men in the industry here would be surprised if they could see the many varieties handled by the eastern fishing interests—fish which were being turned down by fishermen on this coast.

He predicted also that many of the visitors would remain, once they had explored the wonders of the Pacific Coast.

MAYOR GALE assured the association that if it did decide to hold its convention in Vancouver next year the citizens would gladly welcome it.

As most of them knew, he had taken a keen interest in the work of popularizing fish foods and these activities had brought him into close touch with many engaged in the industry. He would be delighted at the opportunity of meeting more of them, and trusted the Canadian Fisheries Association would convene in Vancouver during 1919.

Following MAYOR GALE'S formal invitation, Mr. F. E. PAYSON moved, seconded by Mr. F. H. St. DENIS, that a cordial invitation be extended the association to meet in Vancouver next year, and the assembly carried the resolution unanimously by a standing vote.

Mr. ROBERT C. GOSSE, of the Gosse-Millerd Packing Co., welcomed the prospect of the convention, and promised the co-operation of his firm and himself.

He was satisfied that the fishing interests of British Columbia would render a good account of themselves if the invitation was accepted.

Mr. EDWARD LIPSETT as one who had been serving the fishing industry in British Columbia for over 30 years, was enthusiastic over the idea of the convention being held in Vancouver, and pledged himself to do all that he possibly could in assisting to make the gathering a success.

Mr. V. F. JOHNCOX, of the B.C. Wholesale Fish Dealers' Association, hoped that Vancouver would secure the convention, and speaking for the wholesalers assured the gathering of their hearty co-operation.

Mr. H. W. BRODIE, general passenger agent of the Canadian Pacific Railway, expressed to the gathering the pleasure of his Company at learning of the proposal to hold the 1919 convention in Vancouver, and declared that it was his belief that the railway concerns generally would out-do all past records in car-



R. H. GALE (Mayor),
Vancouver, B.C.

ing for the comforts of the travellers from the east during the week of the convention. He promised that if the restrictions on traffic caused by the war were removed, which he predicted they would be, the company would certainly put rates into effect that would meet with the approval of all desiring to attend the convention from Eastern Canada.

Among those present were:—J. J. Harpell, H. P. Peterson, G. Cassidy, Ed. Lipsett, Martin Monk, Frank Millerd, R. C. Gosse, G. H. St. Denis, T. J. McLay, Dr. McLean Fraser, A. H. Hutchison, C. E. Disher, H. W. Brodie, J. S. Groll, Geo. Murray, Chas. Anderson, H. S. Ives, V. F. Johncox, A. J. Moyls, R. R. Payne, A. W. Sterrett, J. S. Eckman, F. E. Burke, F. E. Payson, M. Des Brisay, Col. F. H. Cunningham and Mayor Gale.

Owing to very short notice being given of the dinner, a large number by reason of distance and prior engagements were unable to attend.

Telegrams and letters regretting absence were received from the following, among others:—Hon. William Sloan, Commissioner of Fisheries, J. P. Babcock, Asst. to the Commissioner of Fisheries; P. J. Shallcross, President of the Vancouver Board of Trade; W. H.

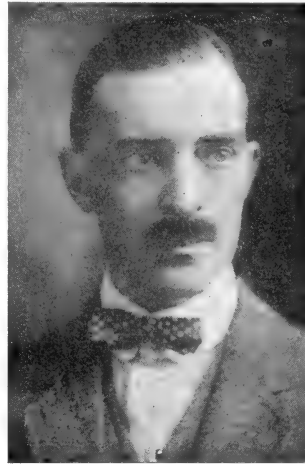
Barker, A. E. Bechtel, Chas. F. Goodrich, W. E. Anderson, A. F. Todd, W. D. Burdis, J. E. Archer, R. Helme, William P. Powell, J. M. Watson, James Anderson, John M. Rudd.

Backing his formal invitation at the dinner, Mayor Gale, of Vancouver, has kindly sent to the Executive Council a written official invitation which is supported by another from the Vancouver Board of Trade signed by the President and Secretary, both letters are reproduced herewith.

President and Members, Executive Council,
Canadian Fisheries Assoc.,
Montreal, P.Q.

Dear Sirs,—On behalf of the City Council and the citizens of Vancouver, I beg to extend to your Association a cordial invitation to hold your 1919 Convention in Vancouver.

The growing importance of the fishing industry in B.C. warrants me in pressing upon you the claims of



P. G. SHALLCROSS,
President Board of Trade, Vancouver, B.C.

the Province and of our city for consideration in this regard, and I can further assure you that in the event of your seeing your way clear to comply with our request every effort will be made to make the stay of your delegates among us a pleasant one.

I sincerely trust that your Association will be able to meet our wishes in respect to your 1919 Convention.

Yours truly,

P. M. GALE, Mayor.
President and Members of the Executive Council,
Canadian Fisheries Association,
Montreal, Quebec.

Dear Sirs,—The Vancouver Board of Trade wishes to join with the Mayor in extending to your body a hearty invitation to hold its next annual Convention in this city.

British Columbia, as you are aware, is the largest producer of fish of all the Provinces of the Dominion, and that commodity is one of the greatest of our natural resources.

We extend to you a hearty welcome and promise you splendid accommodation and excellent weather.

Yours very truly,

P. G. SHALLCROSS, President.
W. A. BLAIR, Secretary.

SOME FISH!

Through the courtesy of Mr. M. F. Tompkins, Assistant General Freight Agent, Canadian Government Railways, Moncton, N.B., we reproduce, on opposite page, photos of a school of blackfish which were stranded on the beach at River John, N.S., recently. Over two hundred of these fish were beached and their total weight was around half a million pounds — one fish weighing two tons. Altogether \$10,000 worth of oil was rendered from these fish.

Blackfish are quite common in our Atlantic waters during the summer and can be seen in large schools disporting themselves. They are not fished for commercially as the quantity of oil they yield is not sufficient to repay the expense of fitting out vessels for their capture. The old-time whalers would never think of harpooning a black-fish as experience showed that harpoons and lines generally went with the fish which usually darted away at express speed as soon as they felt the iron in their bodies.

FISHING ON THE NORTH SHORE GOOD.

Some \$250,000 worth of codfish were landed this season on the North Shore of the Gulf of St. Lawrence, and put down in salt. Huge runs of fish struck inshore and along the beaches and the fishermen made good money.



The W. A. Freeman Co., Limited. Of signal interest to the retail fish dealer is the "Ultimate" fish display and selling counters exhibited by the W. A. Freeman Company, Limited, of Hamilton, Ontario, at the 1918 Canadian National Exhibition, Toronto. The reproduction hardly does justice to the beauty of design and finish in the real article, nor is it possible in a printed picture to give any idea of the appearance of absolute cleanliness and sanitation which this counter embodies. Fresh Ontario Lake fish were displayed for one full week and were fresh and wholesome at the end of that period. This in itself is a remarkable performance for a semi-open type of fish counter, and is due entirely to the perfect circulation of cold air flowing over the iced fish from the refrigerating coils in the rear of the counter. The heartiest approval was given the counter by the Canada Food Board's representative in charge of the fish exhibit at the 1918 C. N. E. The fish dealer who was not fortunate enough to view this modern business-getter would do well to get in touch with the manufacturers for detailed data.

KLIM CHANGES PRICES.

The Canadian Milk Products Co., Ltd., manufacturers of KLIM, which is well known in the fishing industry, have found it necessary to make some changes in the price of this commodity. The following are the new prices, f.o.b. Montreal:

Klim, small size (48¼ lb. tin), per case.....\$ 5.35
Klim, household (24-1 lb. tins), per case..... 7.65
Klim, hotel (6-10 lb. tins), per case..... 17.75

Disappearing Boat Propeller Co., Ltd., Toronto, showed models of their power-boats. The construction of this boat is particularly adapted for shore fishing, as the propeller is so constructed in the centre of the boat as to be raised up by a lever in order to allow the boat to go over shallow places, or to be hauled up on the beach. A number of the fishermen throughout the country are now using this boat, and find it gives splendid satisfaction.

The Canadian Oil Companies, Limited, displayed a full line of their oils and greases from an attractive booth in the Transportation Building. Among the literature given out were copies of their interesting house organ, "The Canadian Oil News," for September. Copies of this journal can be had on application to the company at their Toronto office.

The Canadian Salt Co., Limited, of Windsor, Ontario, exhibited an elaborate display of salt and numerous other much used materials of which salt is the basis. This included soda, bleaching powder, caustic and other products.

Canadian Consolidated Rubber Co. — Among the many lines in rubber shown by this concern at their various booths at the Canadian National Exhibition this year was that of their well-known Merchants' Brand Redman Fishermen's Hip Boots, displayed at the Fisheries exhibit in the Government Building. This special rubber boot for fishermen, made by the vacuum process, is finding favor with the industry throughout the country, and is stocked by all the leading jobbers in the fisheries supplies.

Canada's National Exhibition has established a remarkable record for the war year of 1918. During the 12 days of its operation the total attendance registered 946,400.

1918 was known as "Produce and Save" year. Agriculture, fishing, industry, education, enterprise and endeavor in every sphere making for progress and betterment were given impetus, and Canada's fisheries in particular were given prominence. A few years ago it would have been difficult to have found an exhibit appealing to any branch of the fishing industry, but from the appended brief description of some of the principal exhibits it will be seen that many manufacturers realize its growing importance.

The Exhibition is a national asset, and its growing success and prosperity give cause for national congratulations.



4,000 LBS. OF BLACKFISH.



STRANDED BLACKFISH AT RIVER JOHN, N.S.

Handling and Preparing Fish for Market

Address before Canadian Fisheries Association Convention, Halifax.

J. J. COWIE

Mr. President and members of the Canadian Fisheries Association when your secretary asked me to read a paper at this, your Annual Meeting, on the preparation of fish, I consented to do so, with some diffidence because a meeting such as this is usually composed mainly of the larger men in the trade who know their business and can see defects in the handling and preparing of fish of various kinds for the market and think of and apply remedies just as readily as I or any other expert could do. But there are those and they are greatly in the majority, I fear who, either through want of will or lack of knowledge, fail to realize the importance of close and careful attention to details in handling fresh fish or in curing them afterwards. To the great majority then, who are not here, I chiefly address the few remarks I have to make with the hope that they may be reached through the organ of your association, the "Canadian Fisherman" which I have no doubt will duly publish what is said at this gathering.

Before saying anything further with respect to the subject on which I am to speak I should like to congratulate on the growth of this young association and to convey to you my high appreciation of its efforts towards improving the conditions under which fish are produced and distributed in Canada and abroad today. I know something of the National Sea Fisheries Protection Association of Great Britain, the Association on which yours is modelled, and what it has accomplished for the benefit of the trade there during the many years it has been in existence, and I venture to say the record of what your Association has done for our fisheries in the few years it has been at work will more than compare favourably with that of its progenitor. The British one unfortunately is not representative of all branches of the industry and for that reason many fisheries matters of national importance lie untouched by it. Your association on the other hand represents the interests of the whole trade, and everything connected with it from the lone fisherman in his dory, catching a few cod on an outlying part of the Atlantic coast, to the big corporation canning salmon in vast quantities on the Pacific. I feel sure, therefore, that success will continue to mark its path in the coming years.

But to turn to the matter which has more particularly called me to my feet, I wish to observe in the first place, that I have no intention of afflicting you on this occasion with a long winded dissertation on the curing of fish.

I note by your programme that there are other papers to be read and discussed some of which may cause prolonged discussion. I must, therefore, conserve time by confining myself to touching a few of the salient features connected with my subject.

We hear and read a great deal in these days about increased production of fish and of what is being done through various agencies to stimulate a demand for the greater supplies.

The development we are all so proud of, however, is not something that has taken place overnight, or even altogether since this unprecedented war has come upon

us bringing in its train price conditions which have spurred the trade to greater activities and caused the annual value of our fisheries to jump from \$33,000,000 in the year before the war to over \$52,000,000 last year.

As a matter of fact the trade in fresh and smoked fish has been growing quite rapidly for a good many years. To be exact, development began in 1907 when the Department inaugurated the policy of subsidizing Canadian shippers of fresh fish to enable them—which they very soon did—to at least supply Canadian markets, which had been previously almost entirely supplied from Portland and Boston.

Increased production and consumption of fish has been the theme of many addresses and "press" articles since that time. Eight or nine years ago, in the course of compiling our Annual Report on the Fisheries, it became clear to me that the value of the fisheries of eastern Canada had practically stood still for twenty years or more.

I, therefore, deemed it my duty to note this lack of progress, and wrote an article which drew considerable outside attention to the condition of the fisheries at the time. In it I pointed out what was being done in other countries to promote an increased consumption of fish and how our fresh and smoked fish business, our main hope of advancement, could be re-animated by the dissemination of literature with the object of teaching the public how to use fish as a daily diet and not as an occasional change from meat; of convincing the housewife of the great food value of fish and of showing her how to cook it in various appetizing ways; also of keeping before inland dealers the necessity for displaying fish in their shop windows in a manner that would appeal to prospective buyers. In the intervening years the work of enlightenment, along these lines, has been carried forward and today we have advanced far enough to see something of the immense possibilities that yet lie before us in the fish business.

But while preaching the Gospel of greater production, which is a commendable thing in itself, we must not forget what, to my mind, is of much more importance, namely the necessity of improving the quality and making the best use of our present production; especially in view of the time when, with the ending of the war and the stoppage of overseas shipments of frozen fish, we may expect something in the nature of a reaction with glutted home markets. For, no matter how much you produce, unless you place the product, be it fresh, smoked, dried, or pickled on the table of the consumer in good condition, he will not continue to consume it.

Fresh Fish.

One occasionally comes across people who have no use for fish of any kind, but most people are fond of fish when it is perfectly fresh. No one wants it when it begins to stink, and no food stuff reaches that stage quicker than fish.

It may be that having lived for the greater part of my life on the coast and having been accustomed to eating fish within a few hours after they have come from the water, I am somewhat fastidious in my taste as to its freshness. Whether that is so or not, I sometimes find it hard to get real fresh fish now, living, as I do a considerable distance inland. Transportation difficulties are not responsible for this to such an extent as formerly, owing to the facilities proved by the Department ten years ago, and improved year by year as experience has been gained. It is due in many cases

to the fish being kept too long in the vessels before landing. Of course from where boat fishing is carried on and fish are landed in perfect condition the same day as they are caught, we can and do get fish even in the inland cities in first-class order. I am afraid, however, that the proportion of boat-caught haddock and cod that is shipped inland in a fresh state, today is not so large as it once was. In order to secure quantity for the fresh fish trade, quality and condition have been sacrificed to some extent by the employment of the largest sailing vessels and steam trawlers. These go farther to sea and remain out until they have a catch worth while making the land with. This condition is inevitable, but it can and will, I am sure, be improved as time goes on, by the buyer at the port of landing judiciously selecting the later caught fish from the earlier caught ones when a voyage has been extended to almost a week and shipping the former only as fresh fish. This is absolutely necessary if a trade in fresh sea fish is to be built up and maintained.

I think perhaps there is not a sufficient difference made by buyers between the price of the freshest fish and those not quite so fresh even in the same vessel. Usually the whole catch is taken out at a first rate for each kind of fish.

In Great Britain, fish are sold by auction and prices vary in accordance with the condition of the fish. While fresh or live fish may make big prices, old stuff sells for very much less. This in a great measure, induces trawl skippers to land a large proportion of their catch in a really fresh state. Trawlers fishing on very distant grounds, of course, sacrifice quality and price for big hauls, a great part of which has to be salted and dried.

The inland dealer himself, however, is often responsible for turning customers from buying fresh fish, by keeping his fish too long on sale, as fresh fish, in order to work them off and save himself from loss. Every inland wholesale dealer and the larger retail dealers should make provision for smoking or salting and drying fresh fish that are likely to remain too long unsold. Unfortunately few of either our wholesale or retail dealers know about the curing or saving of fish in this way.

I will pass from considering fresh fish by emphasizing the need for fishermen, both line and trawl, to bring perfectly fresh fish to land, and for the fish buyers to differentiate in the matter of price between fish in first-class condition and fish not quite so good and to send only the finest and freshest fish to the fresh fish markets; also for inland dealers to avoid selling fresh fish from which all freshness has gone.

Smoked Fish.

The trade in smoked fish has developed tremendously, throughout the country, in the past seven or eight years. Moreover the possibilities of further growth are yet immense, provided the fish are landed in a fresh condition, cured with care and handled by inland dealers in a proper manner. Too often haddocks that have been so long in the vessel as to make them not exactly suitable for shipping fresh are made into finnans. It is hardly necessary to say at a gathering such as this, that no subsequent treatment will make a fish, that comes too late into the hands of the curer, a good fish. Delicious finnans are turned out of many of the smoke houses in this province of Nova Scotia. This I know, because when I have ordered some directly from the coast

I have been supplied with the real Mackay as they say in Scotland.

I have, also, sometimes found the right quality in the inland retail fish shops, but also, I have more often found in the same shop, finnans that smelled high in cooking and tasted of far too much salt in eating. In such cases excessive salting had no doubt been resorted to in order to counteract the effects of age. Over-salted finnans are almost as considerable to the consumer as halfstinking ones. These remarks apply with equal force to kippered herrings and smoked fillets.

My advice under this head then is to find out the consumer's taste and produce with scrupulous care an article in accordance therewith. Smoke only fresh fish; be very particular about having the pickle always of the same uniform strength; pickle your large fish and medium or small fish separately and carefully note the length of time each is to remain in it; note the condition of your fish and regulate the pickling period accordingly. For instance, as you know, haddock caught in March or April, when they are thin, after spawning, do not require nearly so much salt as those caught in the end of the year when they are fat and in the best condition. The fish should not be too highly colored and dried in the smoke house. Smoke should be produced from fresh dry hardwood, and not from old wet wood that might possibly make the smoke sour.

Dried Fish.

With respect to the dried fish trade I would remark that while the best results are to be obtained from fish that are split and salted in a very fresh state, freshness is not so much of a necessity in salting and drying as in shipping fresh or smoking.

In the splitting and cleaning of fish for drying there is much room for improvement on most parts of the coast. The knife is not always run down to the tail, close to the bone as it should be, but is sometimes allowed to run out through the side of the fish two or three inches from the tail. The black lining of the belly is nearly always left untouched, while small blood clots and ragged pieces of fish are not brushed or cut off so carefully as they might be.

Attention to such details adds immensely to the appearance of the dried product and of course helps the sale of it, especially in a dull market.

One of the serious troubles of the dried fish industry is caused by what is known as "Red Cod." In Norway where large sums have been lost through this pest a great deal of attention has been given lately to the question of discovering and removing the cause of it.

It has been found that the trouble is due to the growth of a fungus, the germs of which infest the fish while they are still under process of salting. Infection may be caused by infected salt or the implements used in the curing shed.

Mr. Høye, a Norwegian investigator, says that minute germs settle on a fish; each swells to double its former size and divides into two cells; these again increase in size and the process goes on while the fish remains in salt, until a small whitish speck appears. Each speck consists of hundreds of thousands of small cells. The specks of the cell-clusters then begin to be covered with dark brown spores. At the same time the cell-clusters send their roots in all directions over and into the flesh of the fish. The decomposition of the fish is hastened by the action of these roots. Like

all other vegetable organisms the development of the fungus depends on the temperature. The higher the temperature the quicker the growth. In low temperatures development is arrested.

Mr. Hoyer made extensive investigations over a long period, with cell-clusters of various sizes and with pieces of infected fish, in order to determine whether the fungus could be frozen to death. In all cases after being subjected to a temperature of two degrees below zero, the fungus grew and developed when again exposed to a summer temperature. Hoyer's conclusion is that the only way to prevent the formation of the fungus is to prevent the germs or spores from settling on the fish in the process of curing. He has further come to the conclusion that the salt is the chief means of spreading the infection. The salt may become infected in the vessel in which it is imported or by being stored in a room previously infected or by the use of infected implements for handling it.

Hoyer lays stress on the fact that the infection usually takes place during the salting process. His only remedy is extreme cleanliness. Fish houses, tubs, splitting tables and all working apparatus, should be thoroughly cleansed and disinfected and every effort made to have everything clean and pure after each day's work.

It has often occurred to me that it would probably be a good thing for the dried fish trade if fishery officers were charged with the duty of seeing that splitting tables, tubs and other implements used in preparing cod, haddock and such fish for drying are kept thoroughly clean.

While in the larger establishments cleanliness, no doubt, does receive due consideration, at the many out-of-the-way places where the curing is done by individual fishermen, after the best part of the day perhaps has been spent by him in catching the fish as well, the splitting and curing utensils do not always get the attention they should in the matter of cleaning.

Recently, in the course of dealing with a report from one of our officers on the unsanitary condition of the implements used in a certain fish cannery, we were asked this question by the canner, "Why is it that you are so hard on canners in this respect, when those who cure fish for smoking, drying or pickling are allowed to use any kind of unclean implement they have a mind to?" I must confess it is somewhat difficult to say why the one should not be dealt with as the other is, for the product of both is for human food.

Canned Fish.

I do not think I need say anything under the head of canned fish except to observe that under authority of the Amended Meat and Canned Foods Act which comes into effect on the 15th of December next, the Department will be in a better position, by means of systematic inspection to guarantee to consumers that fish of all kinds canned in Canada are handled in a cleanly manner under proper sanitary conditions, and that unsound fish shall not be packed in cans. A proper understanding of the aims of the Act in the consuming markets will undoubtedly react to the advantage of the whole canned fish industry.

Pickled Fish.

At various times in the past I have said and written a good deal with respect to pickled fish and I do not intend to weary you by repeating myself here. I do wish, however, to express my opinion to you with re-

gard to the need for the introduction of compulsory inspection of pickled fish and barrels.

Inspection at present is optional and the Department has to rely on persuasive efforts alone in order to get coopers to make barrels and packers to cure fish in accordance with the requirements of the Act and submit them for inspection and the brand.

It is satisfactory to be able to record an increased use of the official brand, especially as it is entirely voluntary and involves a considerable amount of extra labor, but I fear the limit in that respect has been reached under optional inspection, because:

1. Great difficulty is experienced in getting coopers to produce the proper type of barrel. Many of them persist in making the old leaky one, which, owing to its comparative cheapness, is readily bought by certain shortsighted packers.
2. Equal difficulty is experienced in persuading packers to cure and grade their fish up to the standard required for the brand by reason of the fact that the present abnormal demand has made it comparatively easy to dispose of indifferently cured fish in inferior barrels.

This causes packers who are endeavoring to produce a higher grade article to feel that their efforts are in vain unless something is done to protect them by preventing the bulk of the Canadian output from being marketed in an inferior condition.

There seems to me to be only one way to remedy this and to make inspection of any value and that is, by having the present Act amended and giving inspecting officers power to enforce compliance with its provisions, both on the part of coopers in barrel making and of packers in curing. The need for this will be felt much more forcibly when war conditions are removed and Europe begins again to flood the pickled fish markets with carefully prepared products.

No good reason can now be advanced as to why producers of this line of foodstuffs should not be compelled to market their goods in standardized packages and grades, just as are packers of other foods that are marketed in closed packages, such as canned meats, vegetables, fruit and fish or barrelled and boxed apples.

Under the Meat and Canned Foods Act we compel canners of all kinds of sea and shell-fish to operate in accordance with the provisions of the Act. It stipulates that all such fish packed in cans shall be subject to inspection during the process of preparation and packing, and empowers cannery inspectors to stop the canning of any fish or shell-fish considered unfit for human food. It also defines the marks and designations that are to be shown on the cans.

Under the Inspection and Sale Act, the Department of Agriculture defines the dimensions and kind of barrel or box that must be used for marketing apples in. It also defines the number and quality of the classes into which apples must be graded and prescribes the brands or marks to be used thereon.

The Fruit Commissioner, who is charged with the administration of the Fruit Inspection part of the Act, has an outside staff of fifteen permanent and fifty temporary inspectors employed to enforce compliance with the grading and marking provisions.

I should be more than astonished if an intelligent man in the trade to-day can be found who will deny that the necessity of applying such measures to the pickled fish business is at least, as great as that of ap-

plying it to the canned foods and fruit businesses.

It is not generally realized that the value of a barrel of the best quality of cured herring or mackerel is from three to four times greater than that of a barrel of apples of the highest grade. Yet the buyer of a barrel of apples is assured of getting what he pays for, whereas he who buys a barrel of pickled fish may and frequently does get short weight and an article that is unfit for food.

My earnest hope, therefore, is that all concerned will fall into line with the idea of substituting an obligatory and effective inspection of pickled fish and barrels for the present optional and ineffective one; and that in the event of this taking place, the heartiest co-operation of the trade can be counted on to further the operation of any such comprehensive system of inspection.

PACIFIC COAST PARAGRAPHS.

While at one time there seemed a possibility of some of the 1917-18 herring packing being on hand, there is now no doubt that all will be cleaned up before the new pack is available.

As is generally known, the Humpbacks only run in any number in the Fraser every other year. An attempt is being made to establish a run in the "off" years. At Oyster River, Vancouver Island, Col. Cunningham, chief inspector of fisheries, has secured a considerable number of fish, variously estimated at from thirty to fifty thousand. Up to September 17th, seven million eggs had been shipped to the Seton Lake Hatchery, which early in the year was taken over from the Provincial Government largely for this purpose.

Increased ice producing facilities have been installed at Butedale, B.C., by Western Packers Ltd. Last season a considerable quantity of bait and ice was supplied to halibut fishermen at this point, and the recent installation will enable the company to give better and quicker service.

Fire destroyed the engine room floor of the Canadian Fishing Company schooner, Carlotta G. Cox (Capt. Howse), necessitating a short lay up.

Capt. Howse, who has been with the company for a number of years, having advanced to his present position from that of fisherman entirely in their service, was making his first trip in command.

The Eagle and Ida N., both independent halibut schooners out of Seattle, went ashore in the fog at Amphritite Point, Vancouver Island. Both may be total losses.

Tremendous runs of Pilehards have been a feature this season on the west coast of Vancouver Island. From Nootka Sound to Victoria they have appeared in large numbers, and several canneries are engaged in packing them. According to Mr. Chas. F. Goodrich of the Sooke Harbour Packing Company, so many Pilehard came into their traps on San Juan Straits that they were blocked, and operations had to cease.

"The oldest inhabitant" does not recall a previous happening of this character; in fact, all records go to show that this is the first time the Pilehard has appeared in the straits in any number.

MACKEREL DISCOVERED ON PACIFIC COAST.

A recent catch of Pilehards landed at the Vancouver plant of the Canadian Fishing Company, included five mackerel, which according to those who inspected them were identically the same fish as found on the Atlantic Coast.

While the Pilehard is regarded by many fishermen on the Pacific to be of the mackerel family, this is the first time on record that the true mackerel has appeared, and the incident has caused a great deal of interest on the water front.

Unfortunately, all but one of the specimens were "appropriated." Mr. A. L. Hager has had the survivor frozen for scientific investigation, meanwhile issuing instructions to carefully save any others that may show up.

THE TAGGED SALMON.

A sockeye tagged with button number 2084 at Carlisle, Lummi Island, Wash., July 19th, was caught in the Fraser River at Soda Creek, B.C., August 16th.

Soda Creek is about 500 miles from Lummi Island, and 1,200 feet above sea level. Without any allowance for this fish lingering in the salt water before entering the river, it must have travelled almost 18 miles per day.

INTERNATIONAL FISHERIES COMMISSION.

The International Fisheries Commission of Canada and the United States met in session again on Sept. 4th at the Hotel Champlain on Lake Champlain.

FISHERIES ASSOCIATION ENROLLING MEMBERS.

President A. H. Brittain of the Canadian Fisheries Association, is out to double the membership during his term of office. Many new members have joined the C.F.A. Those in the trade who are not interested in the Association's work and who still refrain from joining are showing an astonishing lack of appreciation of what the C.F.A. has done for the industry and themselves. If they grudge paying ten dollars for membership now, there is little hope for them.

NATIONAL FISH COMPANY'S NEW TRAWLER.

We learn that Mr. Arthur Boutilier of the National Fish Co., Ltd., Halifax, has succeeded in purchasing a new steam trawler to replace the "Triumph," captured and presumably sunk by the Germans. The vessel is at present under construction at Port Arthur, Ont., and was intended for Naval purposes. She is an up-to-date, modern type of craft and should be ready before the close of St. Lawrence navigation.

LA HAVE COMPANY BUILDING TRAWLERS.

The La Have Fish Company, La Have, N.S., are building a wooden steam trawler of 145 feet deck measurement, 25 foot beam, and 11 foot depth. The company propose building four more trawlers of similar type next year.

The Canning of Sardines at Black's Harbour

By C. C. AVARD, M.A., Editor of "The Busy East."

Far from the madding crowds, remote from busy railway marts and separated from the centres of manufacturing industry, is Black's Harbor, New Brunswick, picturesque and beautiful, one of the finest natural harbors in the world. The first sight of the harbor and village, as one approaches landwards, is a real delight. Looking down from the slopes of the surrounding hills one catches a glimpse of scenery which might well be the subject for the painter's brush. On that bright September day as I drank in the wonders of nature at Black's Harbor I felt that it was good to be alive and

In these days when fish have become so popular as food it may not be out of place to give readers of The Canadian Fisherman some idea of what is being done at Black's Harbor in the way of gathering from the ocean depths the fish, which feed the multitude. Looking back from my recent visit to Black's Harbor two facts stand out in bold relief in my memory. First, the splendid condition of the factories of Connors Bros. Ltd., and second the magnificent type of labor employed. The factories are cleanliness itself while the employees are clean and healthy looking, with rosy cheeks and sparkling eyes. They are eager, alert, energetic,

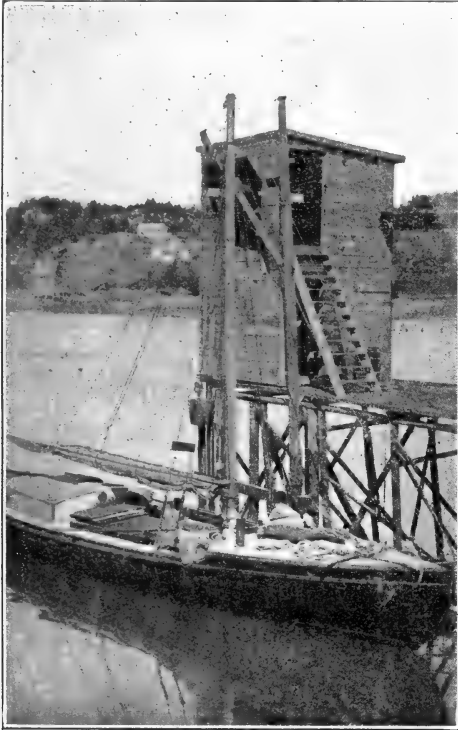


Fig. 1—The Fish being Hoisted from the Boats.

to be able to visit so beautiful a New Brunswick spot. Surely, these Maritime Provinces are rich in natural scenery, as well as in material resources.

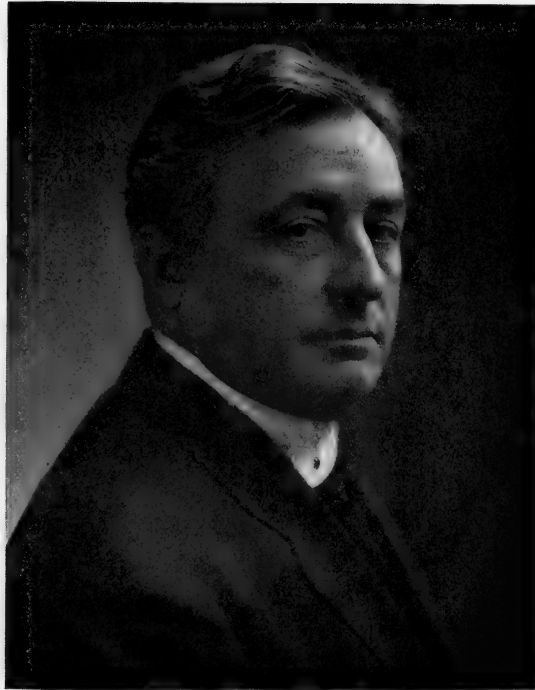
But frequency stales everything. The man who lives in even the most beautiful place imaginable soon comes to take everything as a matter of course. The placid bosom of a splendid harbor becomes mere tide water; magnificent views when dissected become trees, rocks, rugged hills and sleepy valleys. Even the best of things are staled by frequency into the commonest commonplace. But if there is any place that might well be an exception to the rule and prove an unending source of pleasure to those who know it best, that place is Black's Harbor, or as it really should be called, Connors town, for the village of Black's Harbor owes its existence to two men, Messrs. Lewis and Patrick W. Connors, who have made an eminent success of canning sardines, clams, etc.



Fig. 2—Sardines being unloaded from a Boat.

doing their work with celerity and ease most pleasing to see. A visit to the Connors Bros. plant gives one a keen appetite for sardines, and in saying this we are paying a high tribute to the progressive company which last year had a turnover of nearly a million dollars.

Of course the first step in the process of canning sardines is to get the fish. Just as a recipe for making hare stew would begin with "First catch your hare", just so with the canning of sardines. Up-to-date machinery, skilled employees and the best management will avail nothing unless there be fish and just as in days of old we read of fishermen toiling all night and getting nothing, so does history repeat itself in this twentieth century. Those who go down to the sea in ships must be hardy and courageous, ready to tackle anything and to remain calm, alike in peace and dan-



HON. WM. SLOAN,
Commissioner of Fisheries for British Columbia.



JOHN PEASE BABCOCK,
Assistant Commissioner of Fisheries for British
Columbia.



COL. F. H. CUNNINGHAM,
Assistant to the Superintendent of the Fisheries for
the Dominion Government, New Westminster, B.C.



DR. G. McLEAN FRASER,
Director Biological Station, Departure Bay, B.C.

ger. While the fishermen frequently make big hauls which net them much money, yet there are lean days as well and all in all fishermen no doubt earn all they get. To be a fisher of sardines, a man must be a capitalist in a small way. He must not only own fishing boats, but he must build a weir—a fish catching apparatus—which is a large hoop-like enclosure of stakes, brush and nets. For the information of the reader be it said that a weir resembles a cattle yard, into which the fish go when the tide is coming or going out. When the fish go in the gates are closed and then it is merely a question of getting them into the boat with a big dip-

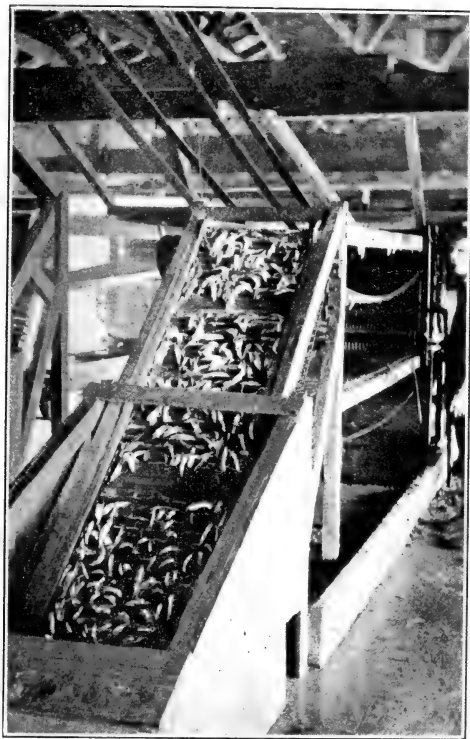
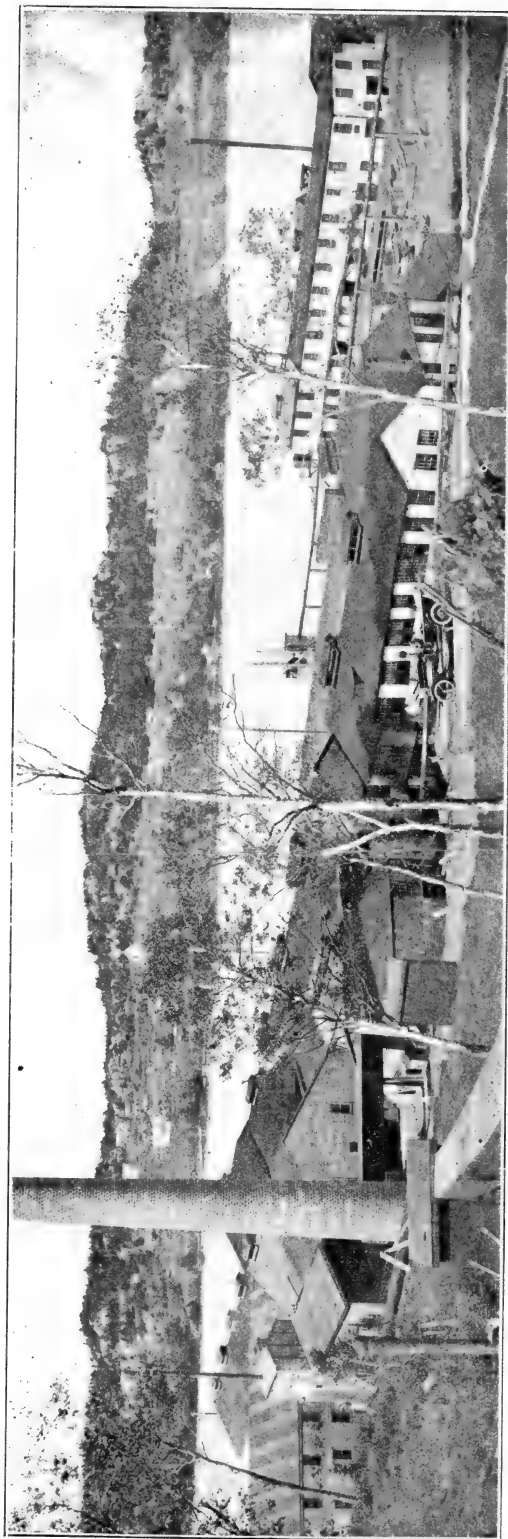


Fig. 3—Showing the Hopper or Endless Belt Arrangement, which Carries the Fish from the Brine Tanks to the Flakes.

net. If a man wants to build a weir he must first choose the site—which must be not nearer than a thousand feet to any other weir—and for this site he pays the federal government a license fee of \$5.00. A weir is usually located off some point of land and far enough from the shore so that at low tide there will be from four to five feet of water in it. A fence of stakes and brush, known as the "lead" runs out from the shore to the gate of the weir. The stakes are driven by a pile driver mounted on a scow. Cross-pieces are then nailed from stake and long spruce and birch poles, with the topmost branches still attached known as "weir-brush" are bent in and out between the crosspieces with the top ends downward. Long poles are next nailed to the stakes so as to extend high above them, and to these a net is stretched. Over the gate of the weir a weighted net is suspended so that it can be dropped to close the weir. Some weirs have only one gate while others have two. The usual practice nowadays is to



General View of the Plant of Connors Bros. Limited at Black's Harbor, New Brunswick.



Fig. 5—The Packing Room of Number 1 Factory.

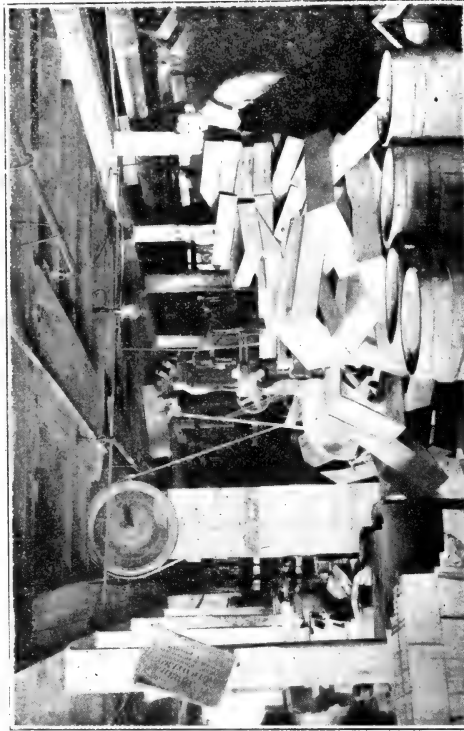


Fig. 7—Where the Wooden Cases, used as Containers for Sardines, are Manufactured.

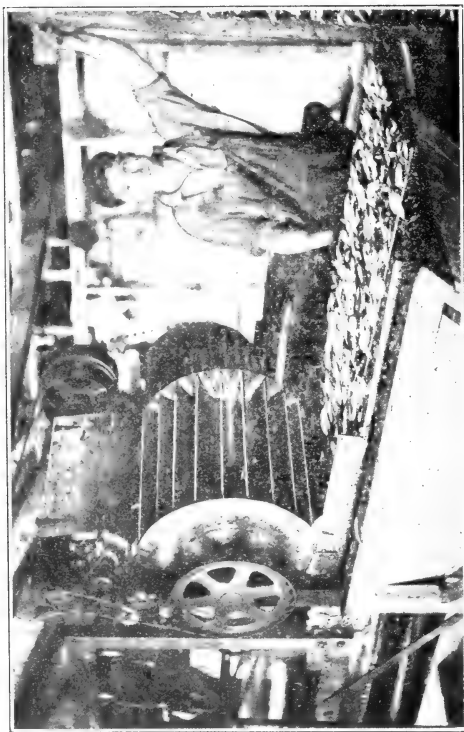


Fig. 4—Fish Being Distributed on the Flakes, Prior to being Cooked in the Steam Boxes.

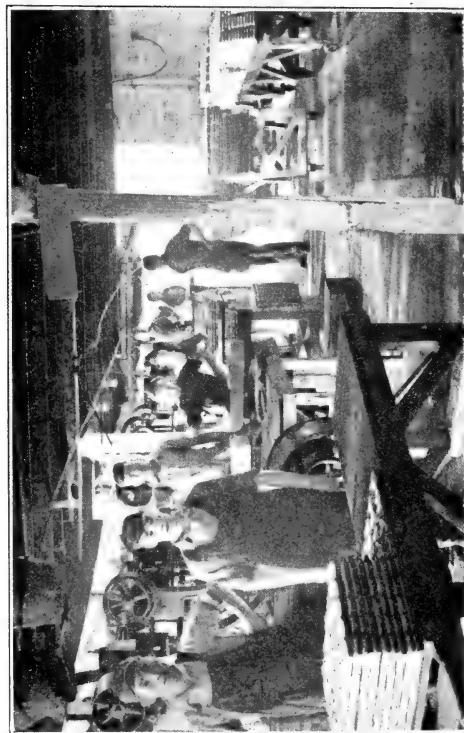


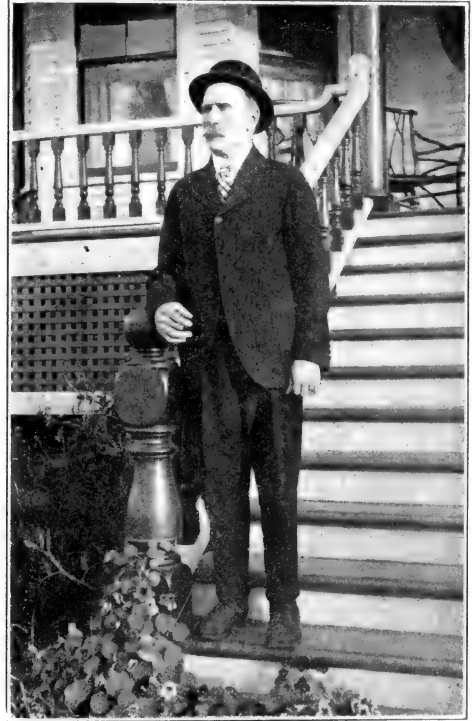
Fig. 6—A View of the Sealing or Closing Department.

have two gates—one on each side of the lead. Weirs cost from \$300 to \$1,700, the average cost being in the vicinity of \$1,000. Supposing the weir has been built the next thing is to wait for the fish. The man who is running a weir keeps close by it during the season, so as to lose none of the fish which enter the enclosure. The sardines, which are really young herrings (*Clupea harengus*) coming in from the sea keep close to the shore. When they strike a lead they will not swim between the brush of which it is composed, but will swim along the lead into the mouth of the weir. These fish travel in schools or shoals, thousands of fish being bunched together. The fish can be plainly seen by the fisherman as they enter the weir, the gates of which are then closed. Usually the fish come in on a night tide. After the fish enter the weir and the gates have been closed, the next step is to put out a seine or net,

contents to the big sardine boats, which are waiting outside the weir. The catch of fish varies greatly. As high as three hundred hogsheds or twelve hundred barrels have been taken at one time, from fifteen to thirty hogsheds are considered a fair day's catch, while anything over two hogsheds are worth seining for. As the fish are being transferred from the dory to the sardine boat salt is shovelled on them. A sardine boat is equipped with sails and a gasoline engine with power varying from fifteen horse power upwards. The boats are sometimes owned by the sardine factories though many of them are owned by private individuals who are paid from \$1.50 to \$3 per hogshed for transporting the fish to the factories, the charge varying according to the distance of the weir from the factory. Connors Bros. Limited own the sardine boats which carry the fish to their factories and mighty fine boats



Mr. Lewis Connors.



Mr. P. W. Connors.

which is long enough to reach around the inner circumference of the weir, and deep enough to reach the bottom, usually from fifteen to twenty-eight feet. The seine is stretched around the inside of the weir by the fishermen in a small boat. Then the cords which are at the top and bottom of the net or seine are gradually drawn in, like great puckering strings, until the fish are gathered into an almost solid mass. At this point the big sardine boats, usually from forty to fifty feet long, arrive in response to the signals of the fishermen. A bargain is struck for the fish and the work of loading them into the small boats is begun. The fish are dipped into the boat with a huge dip-net having a long bag. The hoop of this net is placed on the boat and the bag pulled in, hand over hand, the fish in that way being loaded into the small boat, which transfers its

they are, manned by husky, good-looking men who smack of the sea with its invigorating and energising influence. Ordinarily the sardine boats are run by gasoline engines, the sails being merely an auxiliary power in case something goes wrong with the engine. The poetry, picturesqueness and artistic beauty of the sail boat is rudely jarred by the "chug, chug" of the gasoline engine, but what has been lost in beauty and harmony has been more than made up by utility, for gasoline engines have revolutionized the fishing business. The old days of boats being tossed about on the seas at the mercy of the winds have been superseded by boats equipped with dependable gasoline engines which produce speed entirely unknown in the years that have passed.

The sardine boat having been loaded with fish, at

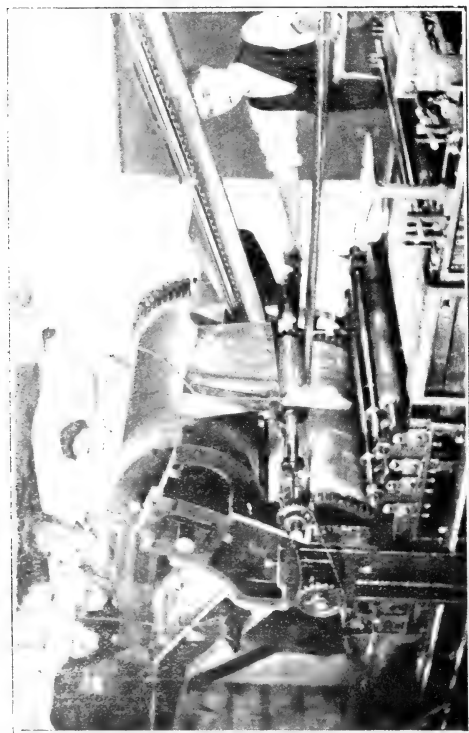


Fig. 8—The Lithographing Press which Prints the Designs on the Covers of the Sardine Cans.

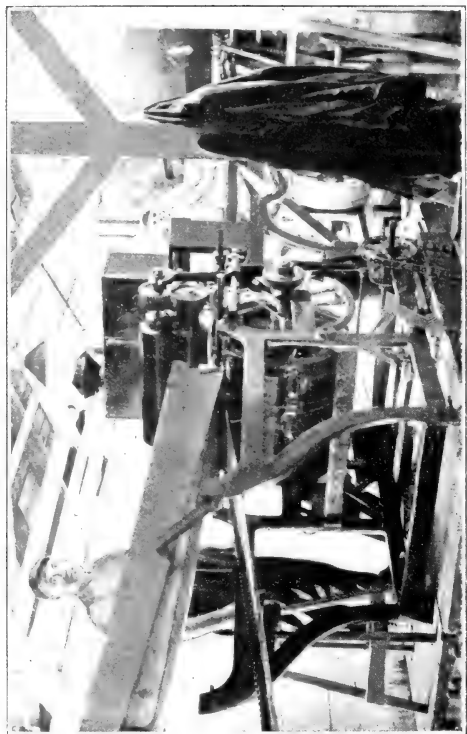


Fig. 9—The Lacquering Machine where the Sheets of Tin are Varnished after being Printed.

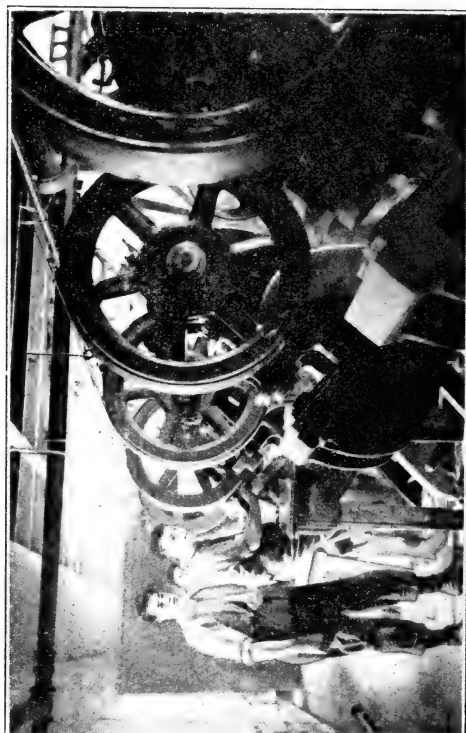


Fig. 10—Stamping Machines used to Manufacture the Cans in Which Sardines are Packed.



The Packing Room of Number 2 Factory, Connors Bros. Plant.

once proceeds to the factory where it is moored at the wharf, alongside of a small building containing a hoisting apparatus (See Fig. 1.) A tub is lowered into the hold of the boat and two men with scoop nets quickly fill it. (See Fig. 2.) The machinery is started and the tub filled with fish is hauled up and emptied into the sluice, about a foot square, sufficient water is run into the sluice to wash the fish and float them into the factory where they first reach the brine tanks, large vats partially filled with salt water. From these tanks the fish are carried upwards to the second flat by a hopper or endless wire belt arrangement (See Fig. 3) which at length deposits the sardines on a large wheel-shaped apparatus which spreads the fish evenly upon large wire trays of a standard size known as "Flakes" (See Fig. 4). These flakes on which the fish have been



Fig. 11—The Big Tank Erected in 1916.

spread are then placed in racks, which hold twenty-five flakes, about a tub of fish or approximately four hundred pounds. These racks, of which Connors Bros. have two hundred and fifty, on wheels, are shoved into the steam boxes or enclosures twenty by twelve feet and six feet high where the fish are left to cook for twelve minutes. There are six of these steam boxes in the Connors Bros. factory and one hundred and fifty barrels of these fish can be cooked at one time. From the steam boxes the racks are removed to the drying room, a large enclosure with a very large fan at either end, driving the hot air into the innermost recesses of the racks and flakes. Here the fish are allowed to remain for one and a quarter hours at the end of which time they are perfectly dry and in first class shape for packing which is the next process.

From the dry room the racks are wheeled to the pack-

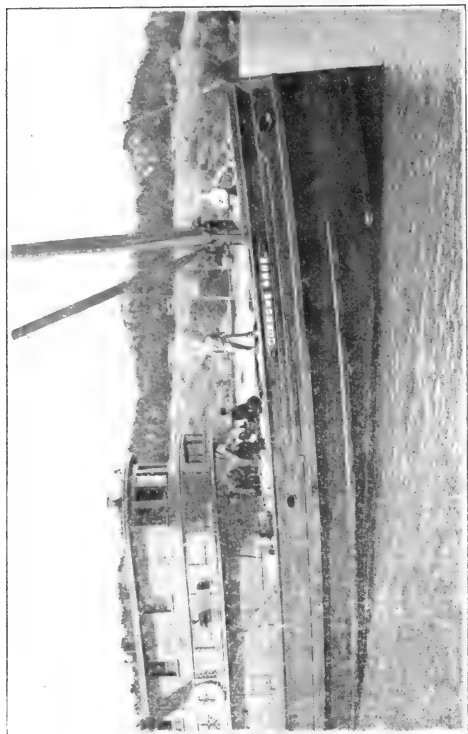
ing room, and my what a packing room it is! (See Fig. 5). Two hundred and twenty feet long and forty feet wide, built new, clean, light airy and sanitary, the packing room of Connors Bros. No. 1 factory is something worth seeing and talking about. If you could stand with me at one end of that immense room and observe the long rows of active energetic girls working with amazing rapidity; if you could see the care and attention which is given every detail of the work; if you could see for yourself how spick and span everybody and everything is in the packing room. I am sure that you would at once make a bee line for the nearest grocery store and buy some of Connors Bros. sardines. Sometimes the less you know about a factory the better appetite you will have for its products, but in this case the reverse is true. The sight of thousands of small fish, cooked to a nicety, and neatly arranged in those cunning little cans is enough to tempt the most laggard appetite that can be imagined. Boys wheel the racks into the packing room and place the flakes covered with fish on tables in front of girls, who immediately proceed to cut the heads off the sardines with scissors. The girls become so expert in doing this that the eye cannot follow the motions. The fish seem to jump between the blades of the scissors and the heads fly off as if by magic. The fish, bereft of their heads are packed rapidly into the cans, which are placed on trays, each holding twenty-five. The packers are paid by the case, one person packing from ten to thirty cases per day.

From the packing room the trays laden with cans, now full of fish are carried on trucks to the oiling machine. The tray is placed in the machine and the pressure of the lever pours the right amount of oil into all the tins at once. The low-priced sardines are packed in cottonseed oil, while those that are sold at a higher price are put up in olive oil. Many are put up in mustard and tomato sauce in which event the process is slightly varied.

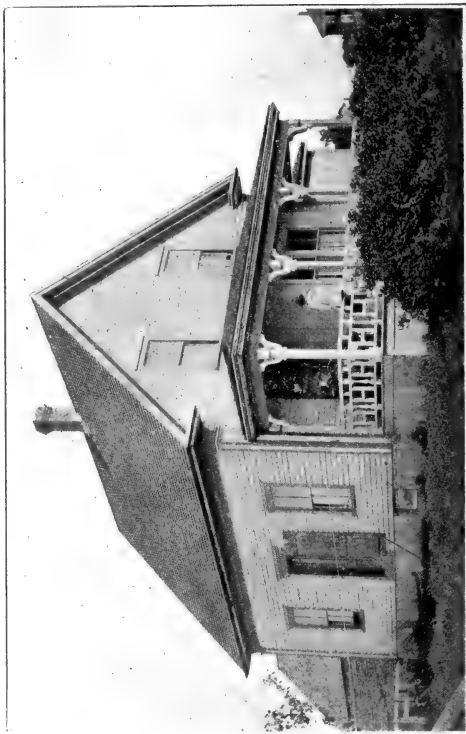
After the oil has been added the covers are laid on the cans which are then placed into a kind of moving rack, which automatically carries them into the sealing machine which clamps on the covers making the tins air tight. These covers were formerly soldered on but now the sealing machines hermetically seal them at the rate of thirty per minute. As a result of this method of sealing, sardines can be cheaply canned, making their price low to the consumer.

From the sealing machines the cans are placed in huge vats of boiling water, where they are boiled for two hours, later being dipped out with chain dip-nets, dried in sawdust and shovelled down a sluice into the shipping room, here they are allowed to cool thoroughly. Each can is subsequently brushed carefully with a whisk and packed into wooden cases holding one hundred cans each. After the name of Connors Bros Ltd. has been stenciled on each box the fish are ready to be addressed for shipment throughout the Maritime Provinces, to Australia, New Zealand, West Indies and other parts of the world.

The making of cans and cases used in the packing of sardines is quite an industry in itself. Nearly half a million feet of lumber are used each year in the Connors factory, while huge quantities of tin are made up into cans. The box department is equipped with up-to-date machinery, including a nailing machine which is shown in figure 7. The process of making and printing cans is a most interesting one and the equipment



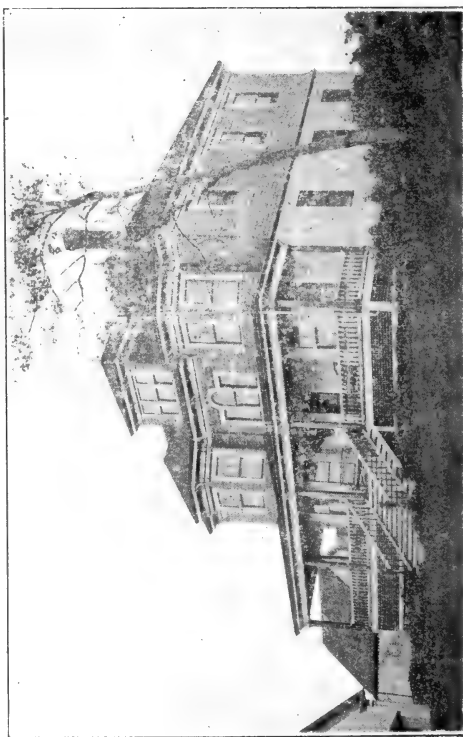
The Steamer "Connors Bros."



The Residence of Mr. Lewis Connors.



BLACK'S HARBOR AT SUNRISE.
Showing the Plant of Connors Bros. Limited.



The Residence of Mr. P. W. Connors.

includes a Hoe lithographing press, a lacquering machine, an oven for baking on the lacquer, various kinds of stamping and cutting machines, etc. Fig. 8 shows the lithographing press into which the sheets are fed. Each sheet makes sixteen covers, the design being printed on each one. From the press the sheet is carried by a sort of endless belt to the lacquering machine where the sheets are lacquered or varnished, becoming yellow or golden in color which is distinctive of Brunswick Brand sardine cans. The sheets are next carried to the oven where they are subjected to 500 degrees of heat for eighteen minutes, later coming out of the oven ready to go to the can making department where the sheets are fed to a slitting machine and afterwards to another machine, which turns out completed covers at an exceedingly rapid rate. In Fig. 10 are shown a row of stamping machines used in making the sardine cans or tins. The sheets of tin are fed to the machines which turn out the complete boxes with a speed that fairly takes one's breath away. In this department as in every department of the factories of Connors Bros. Limited the most modern and up-to-date machinery and equipment are used, but all facilities are required to can the fish necessary to supply the demand for the popular Brunswick Brand Sea Foods.

Most of the fish, which this year will amount to about 200,000 cases, are shipped by the steamer "Connors Bros." above mentioned. Their customers number nearly four hundred wholesalers and jobbers. The company have an office and warehouse at 6 Ward St., St. John, N.B., Mr. Campbell being the manager.

The necessary power to operate the plant is produced by a battery of three 65 H.P. boilers and one 85 H.P. boiler. A number of engines located in various parts of the plant are used to run the machines with which the factories are filled. A splendid brick smoke stack one hundred feet high, was recently built, taking the place of metal stacks, which had previously been used. This stack provides ample draft for the boilers and does away with the smoke nuisance, which had previously caused considerable annoyance to nearby residents.

In 1916 the sprinkler system was installed throughout the plant which consists of factories numbers 1, 2 and 3, warehouses, general store, etc. A very large metal tank with a capacity of 75,000 gallons was erected (See Fig. 11). These hydrants are located in convenient places, with small sheds containing an equipment of hose, axes and other necessary fire fighting apparatus. Every building throughout the plant is fitted with the pipes and apparatus so familiar in connection with the sprinkler system so that the danger of a bad fire in the plant is reduced to a minimum. Insurance rates which before the installation of the system had been almost prohibitive are now greatly reduced much to the satisfaction of the members of the company. Water is pumped into the big tank from an artesian well not far from the plant. The pressure is fifty pounds to the square inch. The system was installed by a St. John firm at the cost of about \$20,000, and is a credit to the enterprise of Connors Bros. who have the reputation of tackling big jobs with commendable energy, great enthusiasm and very unusual ability.

The directors of Connors Bros., Ltd., are as follows: President and secretary, Lewis Connors; vice-president, P. W. Connors; John McDowell, director without office. Associated with the business are Bernard and J. Edwin Connors, sons of Mr. Lewis Connors and Mr. William Connors and Misses Annie and Margaret Con-

nors, son and daughters of Mr. P. W. Connors. Mr. Bernard Connors is head book-keeper and takes a very active interest in the conduct of the business. Messrs. J. Edwin and William also take a deep interest in the business, while excellent support is given by the Misses Connors who have grown up in the business and know every step of the Sardine industry.

During the summer of 1917 an electric dynamo capable of carrying two hundred lights was installed and already the factories have been equipped with one hundred and eighty lights. This has proved a wise step which adds greatly to the convenience and comfort of the plant. Not satisfied with the improvements and progress of the past, however, Messrs. Connors Bros. expect soon to tear down the old part of factory No. 1 consisting of shipping room, bath room, etc. and erect in its place a building with which the new packing room built last year will form a harmonious whole — a factory unsurpassed for the purpose which it is intended.

Mr. P. W. Connors looks after factory number one, doing all the buying for this department and selling the goods produced therein. He also gives personal attention to the canning of kippered herring, finnan haddies, clams and kipperines. He is a director of the Canadian Fisheries Association of Canada.

Mr. Lewis Connors looks after the store and number two factory as well as having a general oversight over the big enterprise. In No. 2 factory higher priced sardines are canned. Here sardines are put up in olive oil, and specially labelled cans, with a key to open them are prepared for picnickers and for the people having special tastes for the gratification of which they are willing to pay prices above the ordinary. In number 3 factory beef and clams are canned, the beef being put up in the winter after the close of the sardine season.

The village of Black's Harbor has been made by the industry of Connors Bros. Two hundred and fifty men, boys, women and girls are employed, nearly \$75,000 is paid out yearly for wages.

The company own a goodly number of houses all built alike, being designed for the comfort and convenience of their tenants. Since the outbreak of the great war the company have been greatly handicapped because of the scarcity of labor. Many of the Black's Harbor men have heard the call of their King and Country, and have gone to fight the Hun on the Plains of Flanders. Many too have made the supreme sacrifice giving their lives in the great cause of freedom and liberty. The company, however, have sought in the trying circumstances to do their best to produce every possible can of fish in order that the world may be fed.

When one sees the heads of the sardines falling off with remarkable rapidity as the pretty girl packers wield the scissors one cannot fail to wonder what becomes of all the fish offal, quantities of which remain as the result of each day's canning operations. The answer is not far to seek. The heads and other refuse are gathered up and cooked for some time then placed in great presses which press out all the oil, the residue being packed in barrels and sold as fertilizer, a ready market being found for the four hundred or more tons which are produced each year. The fish oil, two hundred barrels of which is the yearly output, is sold to domestic and foreign markets and the two by-products fertilizer and oil bring in a very respectable sum.

In addition to the sardine factories Messrs. Connors

Bros. have a well stocked general store, fifty by fifty feet, with large warehouse containing big stocks of merchandise. Goods are sold both at wholesale and retail, deliveries being largely effected by the steamer "Connors Bros.," reference to which was previously made. For the entertainment of the people of Black's Harbor and to make life more agreeable to the employed in the various factories the company conduct a moving picture house, shows being put on four nights a week. Excellent films are shown and the pictures are greatly enjoyed by the people, young and old, who patronize them.

In addition to the business carried on under the name of Connors Bros., Limited, Messrs. Lewis and P. W. Connors are mixed up in various enterprises, including the Sturgeon Cove Land and Lumber Co., located about a mile from Black's Harbor which supplies the shooks required for sardine packing boxes; the Maritime Steamship Company, Limited, owners of the steamer "Connors Bros." which plies between St. John and Black's Harbor and intermediate points; a couple of silver black fox companies and so on. Time would fail us to tell in detail of the activities of these men who with their sons and daughters make a combination which should spell big things in the way of progress and development in years to come.

The growth of Connors Bros. business has been phenomenal. Twenty-five years ago two Irishmen, Messrs. Lewis and P. W. Connors, were fishermen in very moderate circumstances. A start was made at canning, and gradually the business has grown until to-day it is one of the most important in the Maritime Provinces, and the name of Connors Bros. is a household word

in Eastern Canada, and is coming to be very widely known. No kid-gloved aristocrats with high-toned ideas of their importance are founders of this splendid industry, but men right on the job, looking after the detail of the big business, not afraid to do anything that needs to be done about the plant; true as steel and as solid as the rocks which guard the magnificent haven, Black's Harbor. No one can meet Connors Bros. without being impressed with their sincerity, their earnestness, their industry, their willingness to live and let live.

Through the energy and business ability of these men a splendid industry has been established. Why cannot similar plants be established on the shores of New Brunswick? Why should the towns of Eastport, Lubec and other Maine ports be thriving as the result of the sardine industry while New Brunswick, with its splendid harbors and unsurpassed facilities for canning sardines be almost without these evidences of life and enterprise? Given more men like Messrs. Lewis and P. W. Connors and these Maritime Provinces would be blossoming as the rise and taking their rightful place as the most resourceful and progressive of all the provinces of the Dominion of Canada. I have great pleasure in congratulating the Connors Bros., Ltd., upon the success that they have attained in the worthy work of sea food production and conservation. May their business increase rapidly with the passing of the years and may others, inspired by their excellent example, and having learned of them, attempt similar enterprises which will help to build up our glorious heritage, these provinces by the sounding sea.

Western Fish from the Waters of the Prairie Provinces

The coming days will find a greater demand
for our Western Lake Fish.

Be an advance dealer. Don't wait for the
other fellow to create your market.

BUY NOW --- SELL NOW

Headquarters

The W. J. GUEST FISH CO.,
LIMITED

WINNIPEG,

MAN.



C A N A D A

Fish Producers and Distributors

The Dominion Government, through the Food Controller's Office, has inaugurated a campaign to increase the consumption of Fish. This is being supported by an aggressive campaign of advertising — all to the one end — the increased use of Fish as a food.

To the Producer---

Get behind this campaign. Lend your aid and see that the distributor gets enough fish. Be sure your fish is packed right, and that it gets to the proper market in proper condition.

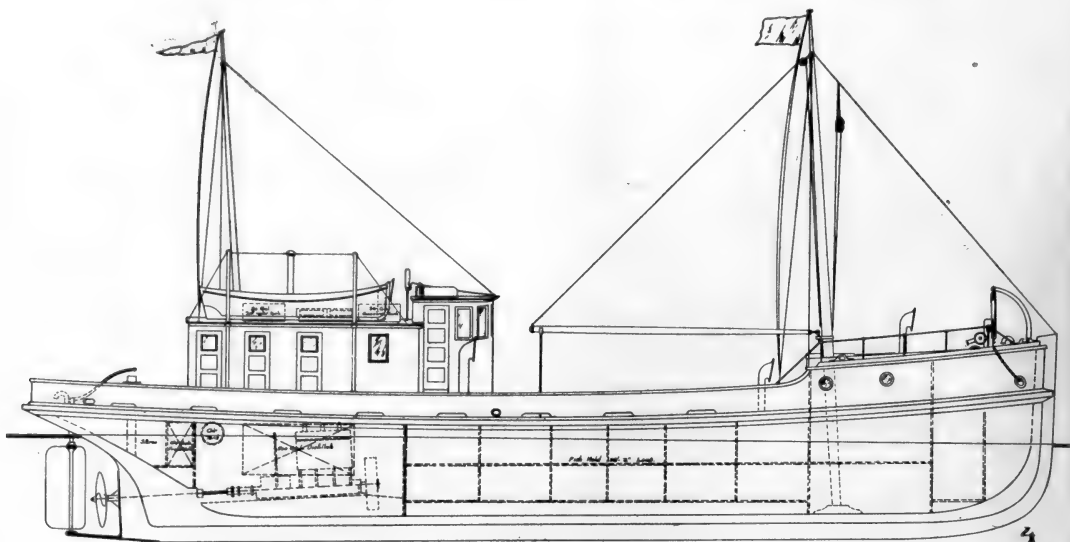
To the Wholesaler---

Largely upon you rests the success of this campaign. See that you have the supply necessary to support the demand. Co-operation on your part means much. The Government has provided improved boxes for the keeping and displaying of fish. See that the dealers get them. Show them how to use them. Urge the dealers to be satisfied with a reasonable profit and give their customers a satisfactory service. It all means better and bigger business for you and them.

To the Retailer---

In this campaign you will find the material on which to build an exceedingly profitable business. Be sure you are in a position to supply fish every day—especially Tuesdays and Fridays. Keep your fish right—display it right. This and the increased demand will mean bigger profits for you.

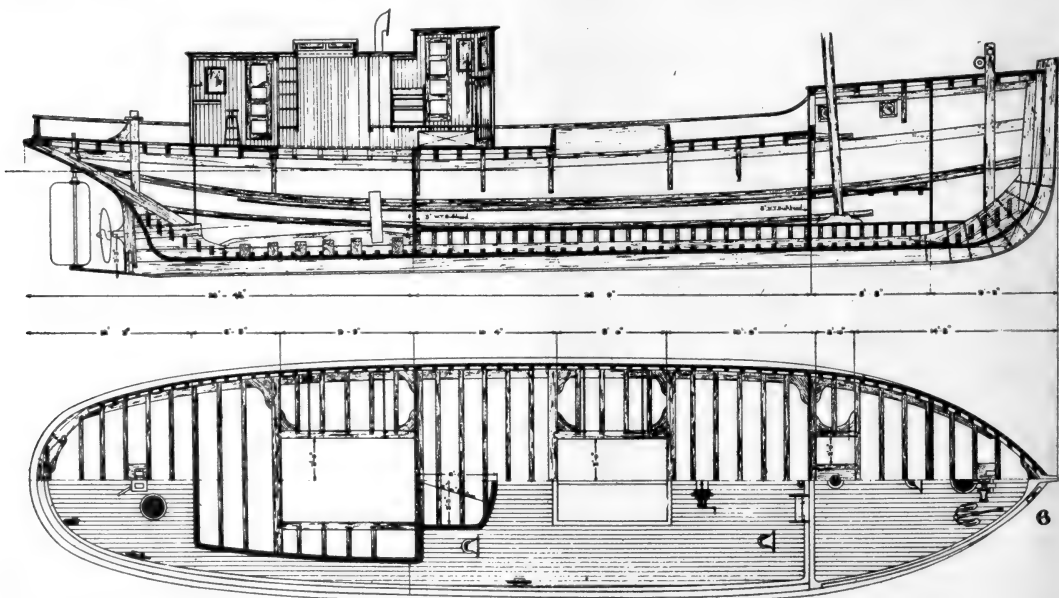
A 75-Foot Fish Carrier for British Columbia



The Outboard Profile of the 75 Foot Fish Carrier for the Alfred Bay Fisheries.

The plans on this page show a 75-foot fish carrier which was constructed in Vancouver by the Taylor Engineering Co., Ltd., for the Alfred Bay Fisheries. The boat will be used in the neighborhood of the Queen Charlotte Islands for offshore work, both as a fish carrier and a towboat, and was launched and placed in commission, July 1.

The over-all length is 75 ft., the beam 17 ft. and the moulded depth $7\frac{1}{2}$ ft. The motor will be an 80 h.p. Frisco Standard that will give a cruising speed of about 10 m. h. p. The plans as prepared by the Taylor Engineering Co. show very staunch construction with a 14in. x 9in. keel, 8in. x 15in. keelson and $2\frac{3}{4}$ in. x 9in. gum false keel spiked to the keel. The stem is of Australian blue gum and the frames are of white oak



The Construction Plans of the Alfred Bay Concern's 75 Footer.

More Fish Less Meat

Save the Meat for our

SOLDIER BOYS IN THE TRENCHES

Encourage the Government in the good work of solving the food question.

This can only be done by installing a good FISH BOX for storage of same.



Complies with the Government requirements. Easily moved, and an attractive fixture, finished in WHITE

ENAMELLED OR MISSION. Built on the same STANDARD as our REFRIGERATORS.

We can build them CHEAPER, but we won't. We would build them BETTER, but we can't.

Do not neglect to Write to-day for CATALOGUE showing FISH BOXES—Sent Free.

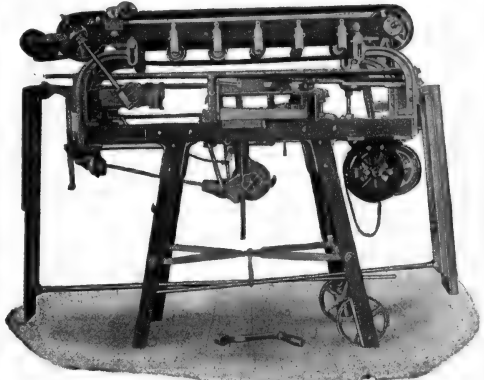
Manufactured by :

The W. A. Freeman Co., Ltd., Hamilton, Ont.

Montreal: **Toronto:** **Toronto:**
DANIEL H. H. NEIL, **P. D. DAVIDSON,** **G. SIMORELS,**
 16 Richmond Sq. 72 Chester Ave. 344 Markham St.
 Tel. Up. 8547. College 8794.

With the high cost of labor can you afford to be without a

Knapp Labelling and Boxing Machine?



Knapp Labelling Machine

The Brown Boggs Co., Limited
 Hamilton, Ontario

E. A. EARL & CO., Vancouver, B.C., Agents

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Consumers Cordage Co., Ltd.	7	Linde Canadian Refrigeration Co., Ltd.	73	Taylor, Robt. Co., Ltd.	72
Cutting and Washington	79	Lipseatt, Cunningham and Co., Ltd.	2	Thorne, W. H. & Co., Ltd.	75
Danto & Co.		Lipseatt, Edward	2	Tower Canadian	73
Department of Naval Service	16	Lockeport Cold Storage Co., Ltd.	2	Tuckett Tobacco Co., Ltd.	
DesBrisay, M., and Co., Ltd.	4	Loggie, W. S. Co.	81	Vhay Fisheries Co.	88
Dominion Fisheries, Ltd.	79	London and Petrolia Barrel Co., Ltd.	84	Walker, Thos. and Son, Ltd.	92
Eureka Refrigerator Co.		Lyons, Chas. Co., Inc.		Wallace Fisheries, Ltd.	10
Evinrude Motor Co.	94	Marconi Wireless	77	Wannenwetsch & Co.	87
Farquhar and Co., Ltd.		Maritime Fish Corporation, Ltd.	91	Western Packers, Ltd.	9
Finkelshtein, Max.	87	McAulity, T. & Sons, Ltd.	94	White and Co., Ltd.	95
Finlay Fish Co., Inc.	76	Murray & Fraser	75	Whitman, Arthur N., Ltd.	
Fish Trades Gazette	85	Mustad, O., and Son	13	Williams, A. R., Machinery Co.	72
Foreman Motor and Machine Co., Ltd.	87	National Refining Co.	13	Wilson, W. C. & Co.	80
Forge, Peter	84	New Brunswick Cold Storage Co., Ltd.	77		
		New England Fish Company, Ltd.	15		
		Newfoundland Government	79		

double 1½ in. and spaced 12 in. in engine room and for 18 ft. at the fore'd end and 14 in. elsewhere. Four tons of cement will be placed in the bilges to give additional stability.

The accommodation plan shows a chain locker in the forepeak aft of which is a fore'sle cabin with built-in berths, folding seat, lockers, etc., this cabin being reached by a hardwood ladder from the deck.

The wheel house will also be fitted with a berth, with lockers underneath and will have a compass shelf, folding chart table, chart racks, etc. The galley is in the texas aft of the wheel house and in addition to Shipmate range will have folding table with fixed seats or stools, ample locker space, etc.

A light and ventilation shaft runs up from the motor room to the deck of the texas and the after accommodations are arranged around this. On the port side is a lamp room which contains a metal-lined filling shelf, racks for lamps and an oil drum with a tap for filling. Aft of this and just forward of galley and messroom is a pantry. On the port side and opening off the deck is the engineer's quarters and aft of this is the toilet, while in the extreme after starboard corner is the staircase down to the engine room.

There is a 150-gallon tank for fresh water under the after deck and a 50-gallon tank for salt water with an air pipe on top of deck and a lin. semi-rotary double-acting pump to provide water for flushing the toilet. The fuel tanks contain a total of 1,000 gallons of distillate and are placed in the wings of the motor room. There is also a 40-gallon air tank and 35-gallon lubricating oil tank. The boat is electric lighted from the main engine by the use of Edison storage batteries.

BILLINGSGATE MARKET.

London, August 10th, 1918.

Market conditions this week have been to a great extent controlled by the holidays. Monday last was observed as a Bank Holiday throughout England and Wales and as this is the last public holiday until Christmas. All who could possibly manage to do so, have been away for a few days up to the whole week seeking rest and refreshment by a change of surroundings. Thus, despite the restrictions now in force on the railways in the shape of a 50 per cent increase over pre-war rates on all fares, and a much reduced train service there was a marked exodus from the big centres of population last week-end. This has adversely affected trade this week, and except for a few of the choicer kinds in request for holiday requirements, trade has not been fast except at prices more or less under the maximum. Small haddocks have again been the most prominent fish landed, and prices while comparatively easy generally, have ruled in accordance with the size and condition of the fish. Catches from Icelandic waters have reached one or two ports, but taking the country as a whole there has been a marked scarcity of long fish. Another feature of the markets this week has been lack of buyers for plaice. Supplies of herrings have varied from day to day, but the first sign of abundance brings prices down with a rush.

In order to quicken the trade during the summer months, when many kinds of fish from home waters can be secured at a level much under the schedule, the wholesale prices of the Ministry of Food Canadian frozen fish have this week been reduced to a flat rate of £5.0.0 per case of about 200 lbs. for cod fresh had-

docks, flatfish, herrings and schnapper. Unfortunately this had not had the effect of quickening sales to any appreciable extent, and there appears little doubt that owing to variations in the quality of the fish in the same cases, and the unreliable weights fishmongers will not be induced to purchase this fish except when scarcely any landings from waters surrounding the British Isles are available. It is hoped that Canadian exporters will heed the lesson, and if necessary the matter should be taken up by the companies packing and exporting the fish in question by the Canadian Fish Trade Association, should one be in existence.

Billingsgate, August 17th, 1918.

Although the general landings this week have been fairly generous, plaice and small, or chat, haddocks, have been unduly prominent, with a corresponding shortage in other kinds. Demand on the whole has been moderately active, but many varieties have changed hands in the distributing markets at prices more or less under control rates, also at many sales at the coast values ruled at the maximum level. Only one lot of deep-sea fish has arrived this week, this being landed at Fleetwood on the North-Western coast of England; previous to the War it was only on very rare occasions that trawlers from the far north fishing grounds, off Iceland, put into Fleetwood, and no regular Icelandic fishing was carried on from there, but now convoys come in regularly.

Herring landings have fluctuated, but with the fishing now opening at more southern ports, there should not be any shortage in the quantity landed. Supplies of kippers vary with the lands of herrings, but little difficulty is experienced in placing all kippers in choice condition, prices usually being in the neighborhood of the maximum allowed by the Fish (Prices) Order, viz., 10s 9d per stone wholesale. The average pre-war price would be about 2s 6d to 3s 6d per box.

The reduction in the price of Canadian frozen fish, referred to in the last report does not appear to have stimulated the demand to any noticeable extent, and it is fairly obvious that owing to the faults so often pointed out in this column this trade must win fresh laurels by being marketed as a standard article which can be relied upon ere the trade reaches important dimensions.

Bruce Stewart & Co., Ltd., Charlottetown, P.E.I., is a well known firm in the fishing districts, particularly in Eastern Canada, as manufacturers of Imperial Motors.

25 years ago this business was founded by Mr. Bruce Stewart and Mr. A. McNair, and was continued as a partnership until 1908 when the present company was formed with Mr. Bruce Stewart as President, Mr. A. McNair, Vice-President and Mr. C. L. MacKay, Secretary-Treasurer.

In their large and well equipped plant at Charlottetown, P.E.I., they manufacture Imperial Gas Motors from 4 to 30 H. P., and also build a 4 cylinder, 4 cycle, 40 H. P. They also manufacture can-making tools, schooner hoisting gear and the "Thermex" Patent Silencer.

It is worth noting that this firm have their own foundry which puts them in an excellent position to give attention to repair orders for every type of engine which they have made. All parts are made to standard gauges and every department is under the supervision of Mr. Bruce, the President.

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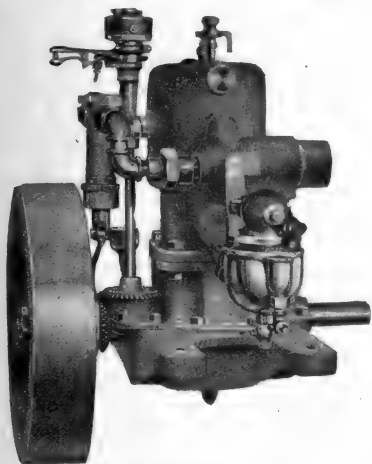
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IMPERIAL MOTORS



5 H.P. Model "A"

When you buy an Imperial you are getting an engine backed by years of service so satisfactory that Imperial Motors are the standard fishing boat engines of Eastern Canada and are to be found in every fishing district in Canada and Newfoundland. They are the best that money, skill and experience can produce.

General Dimensions of 5 H.P. Model "A"

Bore of Cylinder	4 1/2 inches
Stroke	4 "
Weight, engine only	230 lbs.
Complete shipping weight, with outfit	420 "
Diameter of Propeller, 2-blade	18 inches
Diameter of Propeller, 3-blade	16 "
Shaft diameter	1 inch
Shaft length	5 feet

For full information regarding this or any other Model send for catalog. State size engine required.

The Motor that Makes the Mark.

BRUCE STEWART & COMPANY, LIMITED.

Drawer 370, CHARLOTTETOWN,

P. E. I.

**VISIT OF DELEGATES OF CANADIAN FISHERIES
ASSOCIATION TO THE CONSUMERS
CORDAGE CO., LTD., PLANT,**

Dartmouth, N.S., Aug. 7th, 1918.

By ONE OF THOSE PRESENT.

The boat containing the delegates was met at the wharf by Mr. R. L. Graham, Maritime Province manager of the Company, and Mr. John Urquhart, their travelling salesman, who escorted the party for the short walk to the works.

Arriving at the plant, we were taken directly to one of the raw material warehouses and made acquainted with the appearance and some of the characteristics of the various fibres which are used in the different classes of rope and other cordage. It was surprising to learn of the distant sources of supply embracing the United States, Mexico, Phillipine Islands, India, New Zealand, Italy, Russia, etc., from which countries the several classes of fibres are procured.

Next we were taken to the factory proper where more than an hour was spent witnessing the process of rope-making, from the initial stages to the finished product, coiled and matted ready for the market.

In the several buildings visited some hundreds of high-speed machines were in operation, and the accumulated noise from these made it impossible for one conducting such a large party as ours, to explain in detail, the functions of each machine. Therefore, before entering the department, Mr. Graham gave a short sketch outlining the purpose of each group of machines which we would see, and explained the relation of each stage of the process to the next.

Hence we saw the loose disjointed fibres opened from the bales and converted on the preparation machines into continuous ribbons (or in ropemakers' parlance "slivers") these slivers being gradually reduced from a width of seven or eight inches and a considerable thickness as they leave the first machine, to a thin ribbon not more than one inch in width and one-quarter inch in thickness when finally passed into tall cans from the final working of the finishers.

At this stage the fibres forming the sliver are so thoroughly combed and worked that each fibre lies perfectly straight and flat paralleling its neighbor and the sliver runs an even average number of feet per pound, being now ready for the second stage of the process, namely spinning into yarns.

The spinning is carried out on hundreds of high-speed machines called "Jennies" operated by deft fingered girls, each girl caring for a number of machines.

As the yarn is spun it is automatically wound on to bobbins, and as these are filled to capacity they are removed from the spinners and conveyed to the next or third stage of the process; which consists of forming a group of yarns into strands, and the strands in turn being "laved" together into the finished rope and automatically reeled into coils ready for matting and shipment.

This part of the process is accomplished by wonderful machines laid out into groups according to the size of rope they are capable of laying, the size, of course, being regulated by the number of yarns contained in each strand.

For the larger sizes of rope the party was taken to the "Rope Walk," a building about 1,100 feet long,

and here was shown the method of strand forming and rope laying employed when ropes from 2½ in. circumference to 18 in. circumference are required, and the eyes of the visitors bulged at the rapidity with which the finished ropes were turned out.

Further interesting sights were the methods of tarring the yarns when a tarred rope is wanted, and also the process involved in the salvage of valuable fibres which drop from the machines and are subsequently gathered up with the mill sweepings. Here all the dust and useless material is eliminated from the good fibres, and the latter spun into band stock with which the coils of marketable rope are bound.

Time did not permit of the party visiting the Small Twine Department, where wrapping and counter twines are manufactured, but many visited the well-equipped machine shop where a staff of competent machinists care for the upkeep and wear and tear of the great quantity of valuable machinery installed in the various departments.

At the conclusion of the tour the delegates were grouped in front of the Company's fine new office building—erected like most of the factory buildings since the destruction of the plant by the explosion of Dec. 6th, and a photograph taken, a copy of which appeared in the last number of the Canadian Fisherman.

Before departing for their steamer to resume the harbor excursion, each of the party was presented with a handsome and valuable souvenir in the shape of a combination desk paper-weight and calendar bearing the company's name and their "traditional" trade mark, the lion, which elicited three hearty cheers and many tigers for the hosts of the afternoon.

160 MILES OF LUBRICATING OIL.

When recent reports showed that over a million gallons of En-ar-co National Motor Oil were sold during 1917 for use in aeroplanes alone, few readers realized the real extent of "a million gallons" or grasped the true significance of this enormous quantity.

An ensuing discussion brought to light an interesting vision of this vast quantity. If you have never contemplated its magnitude the following calculation will help you realize what "a million gallons" really means.

If this entire quantity of En-ar-co National Motor Oil had been put in regulation 5-gallon cans and these cans set side by side, they would have extended approximately 160 miles. Or, if all these cans had been loaded on motor trucks at one time, it would have taken over 2,000 trucks to transport them.

Using one quart each day, it would take a motorist or boat owner over 10,600 years to consume the entire lot of En-ar-co National Motor Oil that was sold last year for aeroplane use.

When we consider that this huge sale was but a small part of the total consumption of this famous lubricant, we begin to understand its popularity among all classes of motor users.

The Canadian Oil Companies, Ltd., makers of En-ar-Co Petroleum Products, have sales depots in hundreds of Canadian cities and in the following sea and lake ports: Halifax, St. John, Quebec, Montreal, Owen Sound, Sault Ste. Marie and Toronto. Their general offices are located in the latter city.



Why Do "Hi-Press" Give Such Unusual Wear?

"Hi-Press" Boots are delivering so much more wear—keeping feet so much more comfortable—that they are unquestionably the most popular footwear among fishermen today.

The Boots' success is based on two things—knowledge and good will. First, we *know* rubber. Goodrich has meant "Best in Rubber Goods" as long as you can remember, and it takes wonderful skill to so toughen the rubber that it will outlast ordinary boots **TWO TO ONE**.

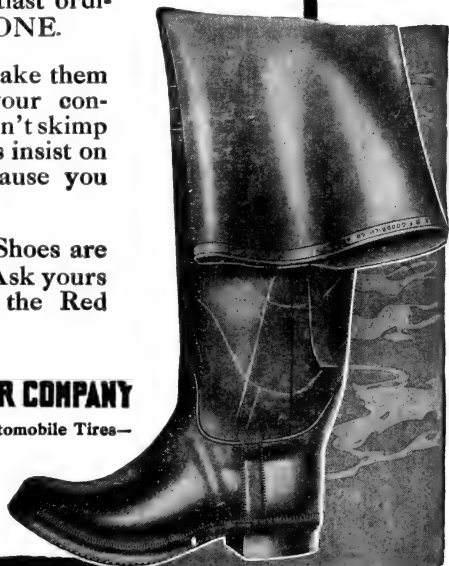
Again, we **WANT** to make them **RIGHT**. We want your continued patronage. We won't skimp—we want you to always insist on Goodrich Goods because you know they are best.

"Hi-Press" Boots and Shoes are sold by 40,000 dealers. Ask yours for the footwear with the Red Line 'Round the Top.

THE B.F. GOODRICH RUBBER COMPANY

Makers of the Celebrated Goodrich Automobile Tires—
"Best in the Long Run"

The City of Goodrich—
AKRON, OHIO



"HI-PRESS"

with the Red Line 'Round the Top

The GOODRICH BOOT

FOR FISHERMEN

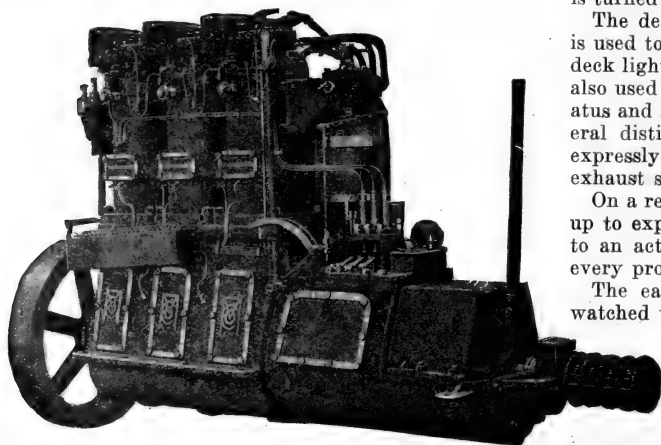
The "Pioneer" the First Oil-burning Trawler

Like all other patriotic measures that Uncle Sam has put before his people, the "Eat-More-Fish" campaign has met with a most gratifying response. Indeed, the demand for sea food has risen to a point that leaves production woefully inadequate.

To make the situation still more serious the government has seen fit to take over a number of our larger fishing vessels, while the U-boat activities in fishing waters have interfered in no small measure with production. Unhappily, at this time when fish is playing such a vital part in our food problem, the supply has been actually curtailed since our entrance in the war.

Without government or U-boat interference—with every fishing boat working to its fullest capacity—there would still be a serious disparity between demand and supply.

Such has been the result of Uncle Sam's advertising. He has made this country a fish-eating nation almost over-night, catching the fish producers utterly unprepared.



Type of "C-O" Engine installed in the "Pioneer."

When we consider that the British Isles, with a population of some 50,000,000, is equipped with about three thousand steam trawlers, while the United States, with twice the number of people, has less than twenty-five such boats in service, we begin to appreciate the extent of this unpreparedness.

Fortunately, we are now awake to the situation; and the building of that most efficient of fishing craft, the trawler, has begun with a rush that bespeaks an effort to make up for our past negligence.

Up to a short time ago steam was the only accepted motive power for this type of heavy-working, sea-going boat; but the tremendous strides made in the field of oil-burning motors during the past few years naturally led to the application of this type of motive power to the trawler.

It fell to the Gray-Aldrich Co., who years ago introduced the gasoline motor to Boston's fishing fleet, to work out the motive power plans for the first oil-burning motor trawler. This latest innovation to the

fishing world gives this company a high place among the marine motor engineering authorities of the country.

Mr. Frank C. Pearce, of Gloucester, had not only an abundance of faith in the ability of the Gray-Aldrich Co., but had the courage to back up his convictions to the extent of ordering the builders to go ahead on a type of boat that had never been built before. It is courage of this kind that has made possible the pre-eminence of America's inventive genius—courage that contributes immeasurably to the welfare of a nation.

Thus, the first of this new type of boat—the "Pioneer"—was launched at Essex, Massachusetts, the latter part of July, from the yards of Tarr & James, the builders. It is 140 feet long, 22 feet beam, with gross tonnage of 128.

She is equipped with two 150 H.P. "C-O" engines capable of driving her better than ten miles an hour. Her winch is electrically driven by a 65 H.P. motor in connection with a 75 K.W. generator. This generator is turned by another "C-O" engine of 100 H.P.

The deck engine, a 10 H.P., Type "Y," oil burner, is used to operate a generator to supply power for the deck lights, engine room lights and search lights. It is also used to run an air compressor, the hoisting apparatus and a force deck pump for washing out hold. Several distinctive engineering features were developed expressly for this type of boat in connection with the exhaust stack and electrically driven winch.

On a recent trial trip the "Pioneer" more than lived up to expectations. Though she has not yet been put to an actual working test in fishing waters, there is every prospect that she will make good in every way.

The early performance of the "Pioneer" will be watched with very great interest, for her obvious advantages over the steam trawler will tend to revolutionize the building of this kind of fishing boat.

In comparison with the steam driven trawler the "Pioneer" has the following advantages:—Its initial cost of building is but one-half as great; the cost of operation is less, requiring fewer men in the engine room; its cruising radius is far greater—six weeks for the oil burner against eleven days for the steam craft; its cargo capacity is very much greater—equal to that of a 175-foot steam trawler. Only the experienced fisherman can fully appreciate this imposing array of facts in favor of the new craft.

It will be seen at once that the success of the "Pioneer" will be of tremendous economic importance to the country. Its low cost will enable the building of two for every one of the steam driven craft, at an expenditure of less in raw materials; and by using oil it will not place an additional burden on the coal situation. It may be well to say here, that the Gray-Aldrich Co. has the assurance of Secretary Redfield that there will be no shortage of oil for boats engaged in fishing.

At noon, August 14, the "Pioneer," Capt. Fred Thompson, arrived at the Boston Fish Pier with 200,000 pounds of ground-fish—thus completing the maiden trip of the first oil-burning trawler.

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

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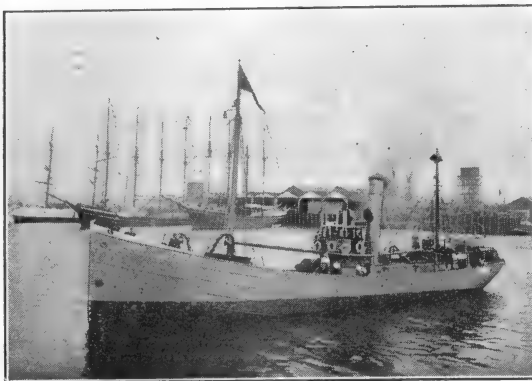
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Halifax and Port Hawkesbury - N. S.

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Fillets,
Kippers,
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Hawkesbury, N.S.

The Utilization of Sea Weeds

By A. BROOKER KLUGH.

We have in Canada one marine resource—a resource of considerable potential magnitude—which has up to the present remained practically undeveloped. I refer to our sea-weeds.

On both our Atlantic and Pacific Coasts we have an abundance of sea-weeds, of many species, and among them are many forms which are the basis of extensive industries in other parts of the world, or species which are closely allied.

Sea-weeds are extensively utilized in France, Scotland, Ireland, and some other European countries, in the East Indies, and in China, but in no other country are they utilized to so large an extent, or in such a great variety of ways, as in Japan. To get an idea of what may be done with marine plants let us look at this industry as it exists in Japan. Information on this subject is made available largely through the work of Mr. Hugh M. Smith, of the United States Bureau of Fisheries, who has investigated the Japanese sea-weed industry most thoroughly. He states that the value of the sea-weeds prepared in Japan exceeds \$2,000,000 annually, this sum excluding the value of the very large quantities which are used locally in the families of the fishermen.

A very valuable sea-weed product comparable to isinglass, and used for some of the same purposes, is known to the Japanese as Kanten. Kanten has been made since about 1760. At first it was simply a mass of jelly formed by boiling the sea-weed, but at the present time it is put up in the form of sticks and bars. It is made from sea-weeds of the genus *Gelidium*, the main species being *G. corneum*, which is closely allied to our species *G. crinale*, so closely in fact that it is only of comparatively recent years that students of marine plants have separated the two species. The Japanese have a common name for this plant—"ten-gusa"—while we have no common name and have to refer to it by its scientific name. This sea-weed is collected by diving, the gathering season being from May to October, though the best months are July and August. It is dried on the shore, some bleaching taking place in the course of drying, and is then ready for sale to the manufacturers.

In the preparation of Kanten the first step is the removal of all foreign matter from the dried plant, this being accomplished by beating, picking over and washing in running fresh water. The wet sea-weed is then spread in thin layers to dry and bleach, and as the drying goes on the plants become agglutinated and more or less fused, forming loose-meshed sheets. These sheets are loosely rolled and, as required, are boiled in a large iron kettle or wooden tub placed over a specially constructed oven or furnace. This boiling burns the sea-weed into a thick pulpy gelatinous mass. This mass is removed from the kettle and strained through a coarse cloth into a vat, this preliminary straining being followed by a thorough straining through linen bags of coarse mesh, which are placed in a crib and squeezed by means of a lever, the jelly falling into a large vat under the press. The jelly is poured into trays to cool, and when sufficiently cool and firm it is cut into pieces of uniform size. These pieces are then put one by one in a wooden box slightly larger than themselves and with a coarse wire grating

over one end. A wooden piston with a broad end fits into this box, and is pushed against the bar of jelly, forcing it through the grating in the form of slender sticks. These sticks are arranged in regular rows on flakes in the open air and dried for several days, then they are trimmed to a uniform length and baled for shipment.

Kanten is pearly white, shiny and semi-transparent, and is tasteless and odorless. In cold water it swells but does not dissolve, but in boiling water it dissolves and forms a jelly. In Japan, Kanten is largely used for food in the form of jellies, which are often colored, and is also used in soups and sauces. In many foreign countries it is employed in a variety of ways, chiefly in food preparations where a gelatin is required, such as in jellies and candies, and many deserts, for which uses it is superior to animal isinglass. It is also used for the sizing of textiles, the stiffening of the warp of silks, and in the clarifying of wines and beer. Large consignments are shipped to Holland for use in the schnapps factories. The price of Kanten is about forty cents per pound.

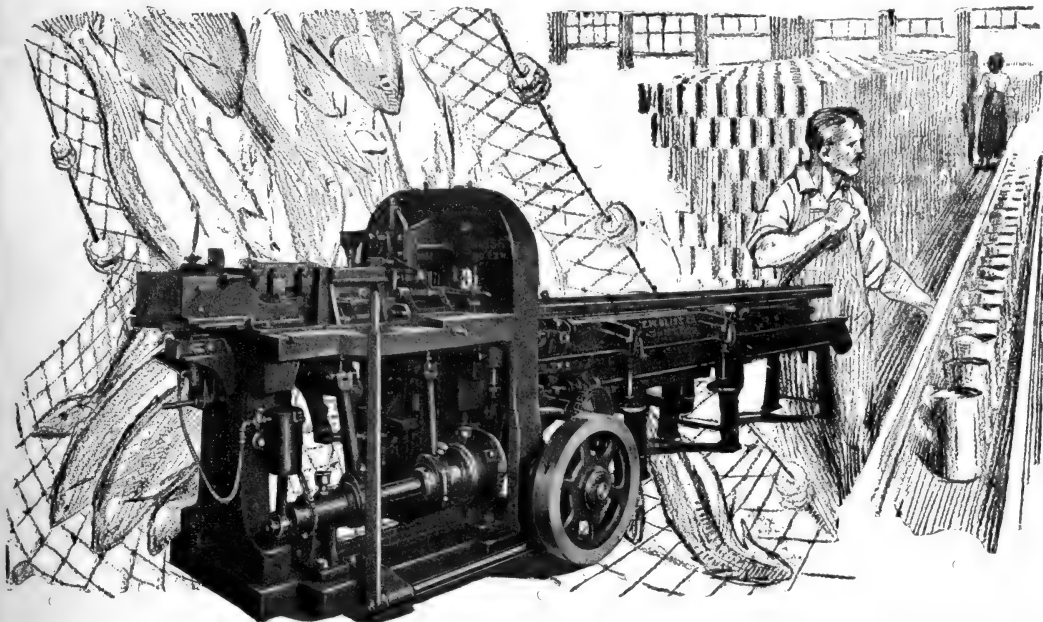
From the large kelps the Japanese make a great number of food preparations, which they term "kombu." This is one of the most important of their marine vegetable preparations and enormous quantities are consumed in Japan and China. Although not so valuable as kanten it is really more important to the country, because of its comparative cheapness, and the numerous ways in which it is used as food. The present methods of manufacture are very primitive and differ but little from those employed in the eighteenth century.

The sea-weeds used in the preparation of kombu are the coarse, broad-leaved *Laminarias*, such species as occur in great abundance at many points along our Atlantic coast. The gathering of kelp begins in July and ends in October, and is engaged in by many fishermen. It is collected by means of wooden hooks at the end of long poles or by hooks with weights attached and dragged at the end of ropes, and is pulled into open boats. When the boats return with a load the kelp is carefully spread out on the beach to dry, and when dry is shipped to the factories.

Kombu is prepared in a great variety of ways, and while some of these preparations are not pleasing to the taste of foreigners, many are highly palatable and should be successful on the American and European markets.

One of the most important Kombu preparations is Shredded Kombu, the steps in the manufacture of which are as follows:

The dried kelp is immersed in vats containing a green dye (malachite green), and maintained at a boiling temperature for fifteen minutes. They are then drained, taken into the open air and suspended on poles to dry. When they are surface-dry they are taken, one by one, and arranged in wooden frames, making a pile eighteen inches high, five or six inches wide and the full length of the fronds. Each pile is then tightly compressed by four transverse cords and cut into four equal lengths, each held by a cord. The cut pieces are then arranged in a rectangular frame, sprinkled with water in order that they may pack



“CANS!---MORE CANS!”

When the run of fish is good that is the cry. If the pack is to be successful and profitable the machines that meet emergencies must be dependable.

The supply of cans must meet the incoming rush of fish smoothly — always ahead, no stoppage for repairs, no failure on the part of any of them to perform its share.

“Bliss” Automatic Can-Making Machinery is used in every part of the world where cans are required—is the development of nearly sixty years—can be depended upon.

“BLISS” AUTOMATIC LOCK-AND-LAP SEAM BODY-MAKER
No. 22-N is the machine illustrated above. Shown with automatic suction blank feed and roll solder attachment. Production speed upwards of 150 per minute.

Write for Catalogue Section No. 18-A



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People's Gas Bldg.

DETROIT OFFICE
Dime Bank Bldg.

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more closely, and strongly compressed by ropes and levers. One of the side boards of the frame is then removed, and the kelp is reduced to shreds by means of a hand plane, which cuts the fronds lengthwise along their edges. The shredded kelp is next spread out on mats or platforms to dry, being repeatedly turned to secure uniform drying. When the surface of the shreds is dry, but the interior still contains moisture, as shown by its pliability, they are packed for shipment.

The manufacture of other Kombu preparations is thus described by Mr. Smith:

"Those species of kelp with the thickest fronds are often dried with special care, so that they will lie flat and smooth and are used in making kombu products for which the thin, narrow-fronded species are not well adapted. The different kinds of kombu now to be mentioned have been made for nearly two centuries, and the consumption at the present time is larger than ever before. The various grades, as will be seen, represent simply successive steps in the treatment of the kelp, one frond yielding a sample of each variety of kombu.

(a) The entire frond is dipped in vinegar, until thoroughly soaked, then dried in the open air. The vinegar softens the frond and leaves it pliable, it also imparts a flavor and doubtless has a slight preserving effect.

(b) With a raw-edged knife, shaped like a mince-meat chopper, the workman scrapes the epidermis from both sides. This outer skin, which comes off in shreds is the cheapest grade of kombu, containing more or less grit and dirt. A second scraping brings away all the remaining green covering, and leaves only the white core of the frond. This product is called *kuor-tororo*, (black-pulpy) kombu.

(c) The scraping is continued with a raw-edged knife, and a fine, white, stringy mass results, which is known as *shiro-tororo* (white pulpy) kombu.

(d) A sharp-edged knife may be used after the green coats are removed, and the scrapings then take the form of exceedingly thin and delicate filmy sheets, of irregular sizes, this preparation is known as *oboro* (filmy) kombu.

(e) The remaining central core of the frond, now very thin, is pressed into bundles with similar pieces, divided into equal lengths, and with a plane cut into shreds after the manner of the green-dyed kombu. The shavings resemble coarse hair, and the preparation has received the name of *shirago* (white-haired) kombu.

(f) The fronds from which the outer green skin has been more or less completely removed are often cut into small pieces of various shapes, strips, squares, oblongs, circles, fans, etc., which are then dried over the fire and made crisp. These pieces are placed on the market in this form, when they are known as *hoiro* (dried-on-the-fire) kombu or they are coated with a hard white or pink icing and called *kwashi* (sweet cake) kombu.

(g) The dried pieces just mentioned are sometimes pulverized and put through a fine wire sieve, yielding a slightly greenish or grayish flour. This powder is sometimes compressed into small cakes and coated with sugar.

(h) A form of kombu, known as *cha* (tea) kombu is prepared by taking fronds which have been subjected to the first scraping process, reducing them to shreds by planing, and after drying, cutting the shreds

into half-inch lengths comparable to the leaves of green tea."

The different kinds of kombu are extensively used in every Japanese family. Shredded kombu is cooked with meats, soups, etc., and also served as a vegetable. Pieces of kombu are boiled in soy-bean sauce, making an excellent relish, tasting like anchovy sauce. The tea kombu makes a palatable drink. The powders are used in sauces, soups, and on rice, like curry powder. Mr. Smith says that the flavor of dried kombu is nutty, and describes sweet-cake kombu as "excellent."

That kombu has a real food value is shown by chemical analysis, the kelps from which it is prepared having been found to contain 6.7 per cent. protein, 1.7 per cent. fat and 47 per cent. soluble carbohydrates.

Another sea-weed which is very largely used in Japan is *Laver* (*Porphyra*) known to the Japanese as *Amanori*. The cultivation of *Laver* is one of the most important branches of the sea-weed industry, and the financial results are quite remarkable, being surpassed by but few branches of agriculture in the value per acre.

The *Laver* grounds are leased to their cultivators by the Japanese Government, and there is a sliding scale of licenses depending upon the yield of the grounds.

The grounds are prepared in October and November by sinking into the muddy bottom, in water up to ten or fifteen feet deep at high tide, numerous bundles of bamboo or brush. These bundles are prepared on the shore and are taken to the grounds in boats at high tide. The bundles are planted in regular lines, deep holes being made for them by means of an elongated conical wooden frame with two long upright handles, which is forced into the mud by the weight of the operator. The object of these lines of brush is to intercept and afford a place of growth for the floating spores of the *Laver*. The spores become attached to the twigs and grow rapidly, so that by January the plants have attained full size, and are harvested from January to March. During the summer the old brush is removed and new material prepared.

While some *Laver* is eaten fresh most of the crop is dried. It is first washed, then chopped fine, and then spread on small mats in such a manner that it dries in the form of sheets. Before the dried *Laver* is eaten it is first put over a fire to make it crisp, then crushed and dropped into sauces, soups, etc., to impart flavor. Pieces dipped in sauce are also eaten as a vegetable. *Laver* is a nutritious food, containing from 32 to 36 per cent protein.

Three species of *Enteromorpha*, known to the Japanese as *Awa-nori*, which grow abundantly on our Atlantic coast in brackish water are used, after being dried and powdered, as a condiment, and our common Sea-Lettuce is much used by the Japanese in the same manner that we use lettuce and parsley. That our Sea-Lettuce is not only edible, but of good flavor I can testify from personal experience with it in both the raw and cooked condition.

The Sea-weed known as *Irish Moss*, a species common

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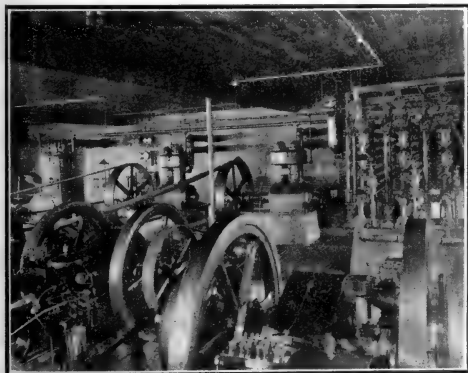
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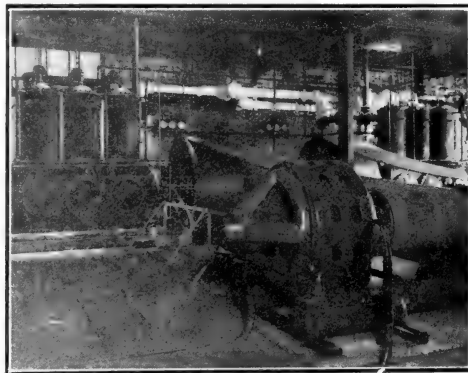
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3 York Ammonia Compr. at National Fish Coy.'s Plant



3 York Ammonia Compr. at Newfoundland Atlantic Fisheries' Plant

CANADIAN ICE MACHINE CO.
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WINNIPEG TORONTO MONTREAL

on some parts of our coast, is made use of not only in Europe, but in the United States, where the centre of the industry is at Scituate, Mass. This plant is collected by means of rakes, washed and partially dried and bleached three times, and then finally dried. It is used in the making of puddings and jellies and also as a demulcent for coughs.

The only sea-weed which is at present as far as I know made any use of in Canada is Dulse, and it is used in very limited quantities. In the Scottish Highlands Dulse is much esteemed as a vegetable.

It seems to me that the esculent possibilities of our sea-weeds are very much worth while investigating and that by the use of improved apparatus for gathering and machinery for preparing them we should be able to tap a hitherto unused source of food-supply and establish an industry of considerable importance.

MARYLAND EDITORS SEE FISHERIES.

Ocean City, Md., August 28.—Members of the Maryland Press Association did not devote all their time to convention business during their meeting here, which closed yesterday. They spent a large part of the first day sightseeing, being the guests of Senator Orlando Harrison on a trip to inspect his orchards and nurseries. In the evening they attended a dinner given in their honor by the Senator, at the Atlantic Hotel.

Among the speakers at the dinner were Gov. Harrington, Senator Harrison, John T. Worthington, of the

Belair Ægis, and T. A. Brown, of Delaware. Gov. Harrington told of the work Maryland was doing to win the war, and laid particular emphasis on the Compulsory Work law, which, he said, is being copied by nearly all the States. As an illustration of how successful the Compulsory Work law is proving, he told of a Marylander worth \$500,000, who is laboring on the State roads, reporting for duty in a \$6,000 automobile, driven by a liveried chauffeur.

They made a trip of inspection to the fisheries on the third day of their visit, getting up at five o'clock in the morning to do it. Later in the day they all went for a sail on the bay, guests of S. D. Riddle, of the Glen Riddle Stock farm.

EVINRUDE MOTOR COMPANY AND THE WAR.

Thus far, a total of twelve men out of the force of the Evinrude Motor Company, have joined the colors. Some of this number have left the Company to engage in special kinds of work, indirectly concerned in the winning of the war and are now being employed by concerns manufacturing guns, trucks, etc.

Of particular interest to Canadian Fishermen fans, will be the formation that Mr. Osmyn A. Dole, formerly sales manager, who also had charge of the advertising, is now in the Naval Reserve with the rank of Ensign. He holds the position of assistant paymaster.

Mr. Thomas Cahill, formerly in charge of the Evinrude service department, is now in the Ordinance Department of the Government.

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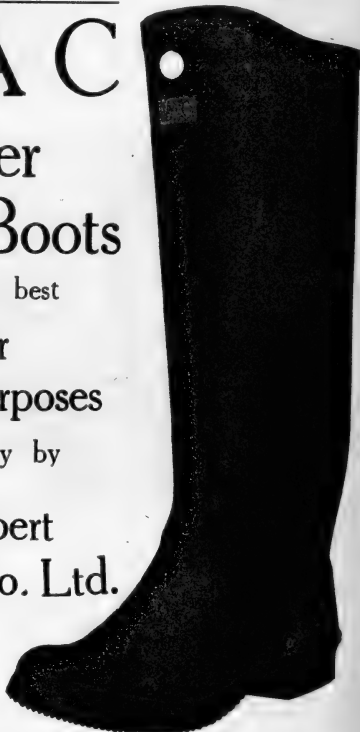
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THE CANADIAN FISHERMAN

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OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

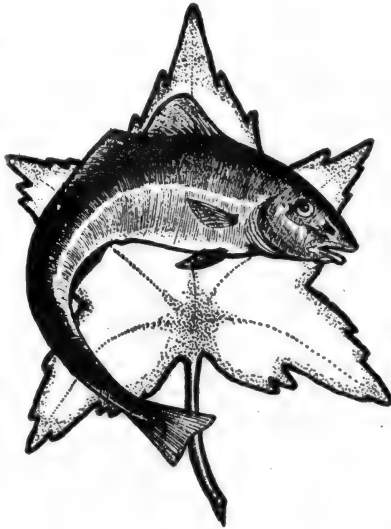
F. WILLIAM WALLACE
EDITOR

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ADVERTISING RATES ON APPLICATION

Published on the 24th day of each month. Changes of advertisements should be in the publisher's hands ten days before that date. Cuts should be sent by mail, not by express. Readers are cordially invited to send to the Editor items of Fishery news, also articles on subjects of practical interest. If suitable for publication these will be paid for at our regular rate.

Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, OCTOBER, 1918

No. 10

THE NATIONAL FISH DAY.

The National Fish Day was conceived by the Chairman of the Publicity Committee of the C.F.A. in 1915. Since that year Mr. Paulhus has worked hard to make it an annual calendar date and he has succeeded very well.

This year, the Association has set the National Fish Day for Thursday, October 31st, and has enlisted the powerful co-operation of the Canada Food Board in making the day the most successful ever, and recognized as a permanent annual day devoted to our fisheries.

The Association's members from coast to coast have been bulletined to get behind the movement. President Brittain has wired all branches, written personal letters to all members, and is looking after the Montreal campaign. The Chairman of the Canada Food Board has personally endorsed the Fish Day, and is requesting the public to observe it by eating fish and refraining from meat on October 31st. Provincial Secretaries of the Food Board are working to make the day universally observed, and officers of the Board's Fish Section are doing all they can to put Fish Day on the map.

President Brittain's letter in this issue explains the object and value of the National Fish Day, and there is no need to dilate upon the subject here. The

Fish Day is a good thing for the fishermen, the producer, wholesaler, retailer and consumer. Get behind it! Show an interest in your trade! Spend a little time, money and effort. The public are going to be interested. Don't fail them and yourself by making no effort above your ordinary day's business. Everybody will be eating fish that day. See that supplies are forthcoming and make prices attractive. Get a customer once and you'll get her again.

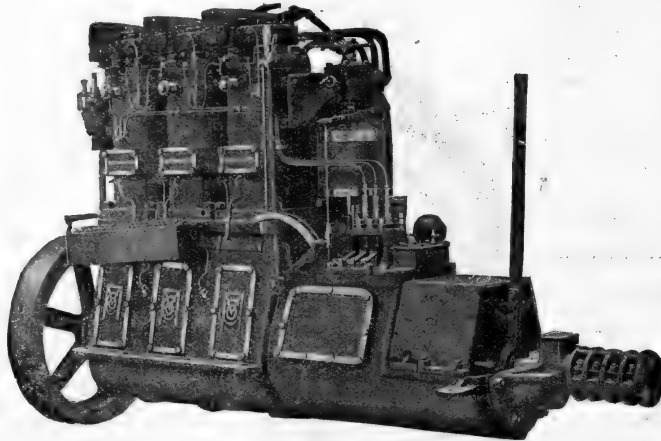
With all our members enthusiastically assisting, and with the Food Board's help, National Fish Day will become as permanent an event as Christmas. Go to it!

SPANISH FLU AND THE FISHERIES.

Spanish influenza or gripe has had quite an effect on the Atlantic fish catch and several vessels have had to lay up until their crews got over it. One Canadian trawler has all hands laid up and the ship is tied to the dock; other fishing craft are held in port with skippers at home swigging medicines and sweating it out under the blankets. If it isn't the skipper, it is the cook or the engineer. Shore craft are on the beach through the same cause.

A Gloucester schooner recently made her way in from the Banks with all hands down with the epi-

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Winnipeg, Saskatoon, Calgary,
Vancouver, Victoria.

demic—some so ill they couldn't stand a watch. How they ever managed to make port is a mystery.

Gloucester has been hard hit with the disease, and several fishermen have succumbed after contracting the epidemic at sea.

With the advent of fine cold weather along the sea-board, the disease is being out-fought and probably by the time this is published things will have resumed their normal activity again.

FROZEN FISH.

In this issue we publish two articles on the above subject prepared by Professor Prince for the Advisory Council of Scientific and Industrial Research. They are worthy of careful perusal and attention, and the trade would do well to make greater efforts to introduce frozen fish to the public.

The flatfish now being marketed from Pacific ports are largely in frozen and glazed condition, and the demand for them has been marvellously created within the last six months. The fishery is rapidly attaining stability and much of its success is due to the fact that these fish are shipped in frozen state and will carry well into remote localities.

Both the U.S. Food Administration and the Canada Food Board advocate the more general use of frozen fish and researches made by them into conditions in the fish trade have revealed the manifold advantages in the handling of fish in a frozen state.

The public is slowly but surely taking to frozen fish, but to foster this tendency and avoid causing set-backs, we would advise a careful study of Prof. Prince's articles by those interested.

TRAWLING ON THE PACIFIC COAST.

The Canadian Fish & Cold Storage Company's steam trawler "James Carruthers," is being laid up for a few weeks owing to the lack of cold storage space to handle her catches. Since being placed in commission last March, the "Carruthers" has made good catches of flat-fish, and cods—landing as much as 80,000 lbs. in a forty-eight hour trip. The company have a good supply of flat-fish on hand, and will be able to supply the market until storage stocks move out and the trawler starts fishing again.

The Canadian Fishing Company's trawler "Imbriaria," under the command of Capt. Dahl Hansen, is landing good trips right along, and the company reports the fishery as highly successful. Carloads of flat-fish have been shipped from Vancouver as far east as Ottawa.

Pacific flat-fish is invading the eastern provinces, and the Atlantic producers will have to look to their laurels soon.

EDUCATING THE RETAILER.

We have written a great deal in these columns of the necessity for educating the consumer as to the value of fish as a food. Nowadays, however, this work is being ably done by the Canada Food Board.

Every bit as important in the whole scheme of fish distribution is the education of the retailer, and this work must be done by the producers and wholesalers. The retailer is the distributor for the latter's wares, and the amount of business he does altogether depends upon his aggressiveness and the manner in which he conducts his business.

The wholesaler is liable to say: "Why should I have to educate our customers?" Why shouldn't you? Who else is going to do it? Isn't it a direct benefit to you?

One of the best mediums for educating the retailer is through the wholesaler's weekly price list or market letter. One of the best of these is produced by the Arnold & Winsor Co., of the Boston Fish Pier, Boston, Mass. It is well printed, profusely illustrated with cuts of fish and gives a mass of information regarding fish in season, the catches landed, and much good advice to retail dealers.

All Canadian wholesalers publish similar market letters, but with the exception of one or two firms, the average market letter here consists of a list of prices and nothing more. It takes time and effort to compile a letter such as the Arnold and Winsor leaflet, but it is time and effort well spent, and furthermore it pays.

This magazine contains much information from time to time which might well be reprinted in the market letters to retailers, and the publicity items emanating from the Food Board offer a good and valuable source to draw from. In most firms, certain members of the staff have good ideas which may be embodied in the market letter, and the staffs should be encouraged to contribute.

The average retailer is a busy man, but he generally has time to peruse a market letter. If the wholesalers make them attractive and interesting, they will be read and the advice given will be acted upon. Urge the retailer to keep fish attractively displayed; inform him of certain cheap lines of fish to use as a drawing card; give him intelligent talking points; give him information about the fish he handles, and the fish he should handle. Discard the hastily compiled and often illegible multigraphed sheet which so commonly features as a market letter. Pay as much attention to the compilation of the price list as you would to your ledgers, and print it if possible.

Educating the retailer helps him and will help you. Canadians have been the pioneers in a good many things. Let us be the pioneers in every thing that is up-to-date in our trade. Get behind this with a punch!

THE GROWTH OF THE MOTOR FISHING BOAT.

The war seems to have stimulated the use of gasoline engines in the fishing industry. In 1913 there were 9,302 gasoline fishing boats employed in Canada's fisheries. Statistics for 1917 show that there were no fewer than 14,823 such craft. These figures show an increase of 5,521 over 1913, and an increase over 1916 of 2,000 craft thus propelled.

Such statistics show a healthy sign of advancement and the adoption of modern methods. The death knell of sail in our fisheries is sounding just as it was sounded years ago in Great Britain and Europe. Nowadays, no business can depend upon the wind. If it does, it is a haphazard business. The fishing industry in Canada is getting down to efficiency and reliability.

Years ago, wind-mills were used to grind cereals. In the good old leisurely days one could wait for corn to be ground. Where would the wind-mill be to-day? Life is too short to wait nowadays and competition is too keen. The same applies to fishing. The motor is displacing wind propulsion just as the steam trawler will displace the schooner and dory hook and line method of fishing. The market demands efficiency.

FISH AND RESTAURANT PRICES.

The fish trade has been receiving a black eye of late through the greed of certain restaurant and hotel keepers. The citizen who patriotically endeavors to do his bit by eating fish often finds it as dear as meat on the menu card and is furthermore served with a very small portion.

We have paid as high as 70 cents for a piece of fish which we know cost the hotel-keeper not more than 10 cents per pound. The portion we got would be about half a pound before cooking. Numerous cases of excessive profiteering could be mentioned by men in the fish business who actually know what the fish cost the hotel buyer.

The general public who eat fish in hotels are, in many cases, paying far too much for it, and the fish dealer, not the hotel, is often blamed for the excessive prices.

Hotels and restaurants buy fish at lower than retail prices, yet on an average the cost of a piece of cooked fish to the consumer these days is from 300 to as high as 1,300 per cent. over cost to the hotel or restaurant. As Artemus Ward would say, "This is 2 mutch."

Complaints on this score have been noted by the High Cost of Living Commissioner and the Canada Food Board, and the latter have issued a warning against these over charges. The fish trade is vitally interested as such excessive prices tend to turn the public away from fish as an economical diet.

PISCATORIAL PARAGRAPHS.

The Alaska cod-fish catch is the biggest known. The fishermen were paid 8 cents a fish, or \$80 per thousand. Some of the men earned thousands of dollars.

The bulk of the British Columbia salmon pack is being commandeered for overseas shipment. A small percentage of the cheaper grades and the chum salmon will be left for home and other markets.

Pennants are being flown by American fishing craft when 75 per cent of their crews have subscribed to the Fourth Liberty Loan. Something similar might be instituted in Canada for our Victory Loan.

Dogfish have been plentiful along the Nova Scotia coast of late. Pity we couldn't use them to worry the Hun submarines.

There is a shortage of dried fish on the Atlantic Coast this season and prices are soaring. The Newfoundland catch is short 500,000 quintals, compared with last year.

Salt mackerel also figures in the short category. Importations from Norway and Ireland will probably be made to supply American demands.

St. John sardine fishermen have made a poor season. The usual good sardine run failed to materialize and the weir men are out of pocket thereby.

Lunenburg fishermen made some big stocks this season in spite of the depredations which submarines have made in their fleet. The price of fish was high and one vessel stocked \$40,000. Many new vessels are being built in the county ready for next season.

TAKE OF SEALSKINS AT PRIBILOF ISLANDS.

In the present calendar year to August 10, the end of the regular killing season, 33,881 sealskins were taken at the Pribilof Islands. Of these, 7,000 were taken on St. George Island and 26,881 on St. Paul Island. The Department had authorized a take of 35,000 skins, 7,000 on St. George and 26,881 on St. Paul. Some few seals will be killed from time to time during the remainder of the year for the purpose of furnishing fresh meat for the natives.

By the terms of the North Pacific Sealing Convention of July 7, 1911, 15 per cent of this year's take of skins belongs to the Canadian Government and a like proportion to the Japanese Government. There will be no actual delivery of the skins, but, under the provisions of the convention, the market value of the skins will be credited to the respective Governments as an offset to certain advance payments made to them by the United States.



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"FISH IS THE ONLY READILY AVAILABLE SUBSTITUTE FOR THE MEATS SO URGENTLY REQUIRED FOR THE SOLDIERS AND CIVILIAN ALLIES OVERSEAS"—Henry B. Thomson.

CANADA FOOD BOARD.

Order No. 65.

Prices for Western Winter Caught Fish.

In exercise of the powers conferred by order of His Excellency the Governor-General in Council, dated the fifteenth day of November, 1917, P.C. 3214, and of all other powers enabling,

The Canada Food Board hereby orders:—

1. The Prices hereinafter set out shall be the maximum prices per pound to be paid for winter caught fish taken through the ice from lakes, rivers and other waters of the districts of the Provinces of Manitoba, Saskatchewan and Alberta mentioned herein, delivered F.O.B. at primary rail shipping points, such point for The Pas being The Pas Railway Depot.

	Lake Winnipeg and district.	Lake Manitoba and district.	Lake Winnipegosis and district.	The Pas.	Saskatchewan except Buffalo Lake and tributary waters & Cold and Primrose Lakes.	Cold and Primrose Lakes, Buffalo Lake & tributary waters.	Alberta.
Whitefish and trout, round	8	8	7½	7½	7½	7	7
Whitefish and trout, dressed	8½	8½	8½	8½	8½	8	8
Pickeral, round	8½	8½	8½	8½	8½	8	8

2. (a) No producer, trader or fish handler shall sell any such fish to a wholesale distributor at more than one cent per pound advance over the above prices at primary shipping point plus the railway freight charges.

(b) No wholesale distributor shall pay a producer, trader or first handler for any such fish more than one cent per pound in advance over the above prices at primary shipping point plus the railway freight charges.

(c) No wholesale distributor, producer, trader or first handler shall sell any such fish to a retailer at more than three cents per pound advance over the above prices at primary shipping point plus the railway freight charges.

(d) No retailer shall pay for any such fish more than three cents in advance over the above prices at primary shipping point plus the railway freight charges.

3. Individual licenses to export winter caught fish taken from the lakes of Manitoba, Saskatchewan or

Alberta must be approved by the Canada Food Board and such approval will not be granted when such fish are re-shipped from points east of Manitoba.

4. Primary consideration must be given to the requirements of the Canadian trade. Approval of export permit will be refused to any person and the license of any person licensed by this Board may be cancelled who has refused to fill a legitimate and reasonable order from a Canadian wholesale distributor, or from a Canadian retailer in good financial standing.

5. No person shall ship or have in his possession for sale any winter caught fish taken from the lakes of Manitoba, Saskatchewan or Alberta in boxes not bearing the name and license number of the fisherman or dealer by whom packed and without having marked thereon the kind or kinds of fish contained therein.

6. In this Order:—

(a) "Fisherman" means a person actually engaged in the work of fishing and known to the trade as a "Fisherman."

(b) "Producer, Trader or First Handler" shall mean any person who buys fish from the fishermen and sells wholesale.

(c) "Wholesale Distributor" means any person who purchases fish from a Producer, Trader or First Handler and who distributes fish wholesale, and who is known to the trade as a "Wholesaler."

(d) "Retailer" means a person who sells direct to the consumer and known to the trade as a "Retailer."

(e) "Round Fish" means fish in the condition caught.

(f) "Dressed fish" means fish which have been cut open along the abdominal cavity and which have the gills all entrails and blood clot removed.

7. The Dominion Inspectors of Fisheries are hereby authorized to enforce the provisions of this Order.

8. Any person violating any of the provisions of this Order is guilty of an offence, and shall be liable on summary conviction before a Police Magistrate or two Justices of the Peace to a penalty not exceeding one thousand dollars; and not less than one hundred dollars; or to imprisonment for a period not exceeding three months; or to both fine and imprisonment.

9. Order number 12 of this Board is hereby revoked.

Dated at Ottawa this 2nd day of October, 1918.

HENRY B. THOMSON,
Chairman Canada Food Board.

ADVERTISING FISH

Some clever newspaper advertising of fish as a food is being done by the Canada Food Board these days. Some twenty "ads" similar to those illustrated herewith have been prepared and decorated by clever and humorous cartoons. Mats of the drawings have been prepared and are sent out to the press.

We would draw the attention of these advertisers to the wholesale and retail trade and suggest that they make use of them in advertising and in price lists. The mats for making the cuts can be secured from Ottawa on request.

DAILY FISH BULLETIN

WAR ON THE U-BOAT

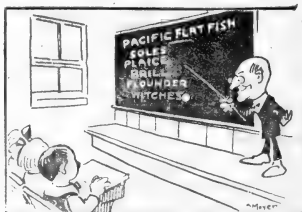


ISSUED BY CANADA FOOD BOARD.

Subdue the Submarine by:
Substituting fish of all varieties for meat.
Substituting economy for waste.
Substituting basket marketing for telephoning and delivering.
Substituting knowledge of sea food prices for gossip about profits.
Substituting co-operation for criticism.
Substituting common sense for common gossip.
Substituting encouragement of the fish dealer for abuse of the fish dealer.

DAILY FISH BULLETIN

ADVERTISING HELPS



ISSUED BY CANADA FOOD BOARD.

The retail fish dealer has pretty much the same task before him as the pedagogue with a class of children. Housekeepers don't know more about fish largely because their dealers have not taken the pains to educate them through the most convenient medium—advertising.

There are dealers who do not believe in advertising. They think their business can jog along without it. But advertising is as much a part of life today as electricity, aeroplanes, surgery or wireless telegraphy.

There are thousands of people in Canada who could be induced to eat more fish if the matter were presented to them in the right light by their dealers. Tabulated lists of fish prices, special bargain days, advertisements that arrest the attention of the most casual reader—all these help to make known to the general public the opportunities they are missing in neglecting to buy fish. And at the same time the dealer is on the way to increasing his trade.

DAILY FISH BULLETIN

CHEMICAL COMPOSITION

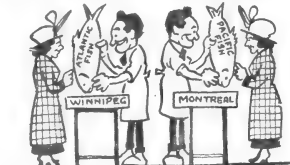


ISSUED BY CANADA FOOD BOARD.

The scientist talks in terms of calories when he comes to analyse food-stuffs. And where calories are concerned, fish holds its own against meat and poultry. In one pound of fresh codfish there are 205 calories and in a pound of salt codfish, 315 calories.

DAILY FISH BULLETIN

FISH CHEAP EVERYWHERE

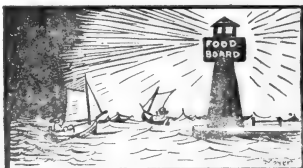


ISSUED BY CANADA FOOD BOARD.

There is no excuse for any housekeeper failing to serve fish several times a week. It can now be secured at singularly low prices all over the Dominion and no matter how isolated one may be from the rest of the world it should be possible to have on hand a supply of frozen fish either from the Pacific or Atlantic Coasts.

DAILY FISH BULLETIN

WATCH THE LIGHTHOUSE



ISSUED BY CANADA FOOD BOARD

It is on an uncharted sea that the housekeeper rocks her boat in these troubled days, but so long as she keeps her eyes fixed on the lighthouse and stands ready to alter her course when the Food Board gives her the cue, then "all's well."

DAILY FISH BULLETIN

GOOD BUSINESS



ISSUED BY CANADA FOOD BOARD.

This is the kind of crowd the Food Board wants to see trooping into the fish shop with baskets over their arms. The "personal shopping" method counts here. There are no delivery expenses and there is the advantage of personal selection.

It is conservation of the most approved kind.



Canadian Fisheries Association

45 St. Alexander Street,
Montreal, Oct. 10th, 1918.

To Members of Canadian Fisheries Assn.

Thursday, October 31st, is the date set by our Association as Canada's National Fish Day. This day was inaugurated as an annual event some two or three years ago by the Publicity Committee of the Association, and we carried out the necessary publicity work ourselves. This year, I am pleased to say, the Canada Food Board is co-operating with us and is asking the people of Canada to refrain from meat on National Fish Day. They are also assisting us greatly through their Fish Section and Publicity Staff, and it is safe to assume that the coming National Fish Day will be extensively advertised to the Canadian Public.

It is now up to us in the Trade to do our part and make the National Fish Day a permanent calendar date—not so much for the amount of fish which will be consumed on that day—but for its value in the publicity and attention it draws to the industry in which we are all engaged.

I would therefore ask that all our members keep the date in mind and do all they can to ensure its success locally and through every medium at their disposal. The producers and wholesalers in the larger centres should create a common fund for newspaper advertising. This advertising should be of a general nature, calling attention to the value of fish as a food, Canada's fisheries as a national resource, fish as an economical and healthful diet, and most important of all the great necessity at this time of substituting fish for meats and assisting the Canada Food Board in its objectives.

With this advertising should go some matter for the reading columns of the newspapers, and which

you may have to prepare. Enlist the editors of your local press and have them write an editorial on our fisheries and fish as a food. Remember the Food Board's slogan of "One Pound of Fish per Person per Week," which is their objective. In all your correspondence, price circulars, etc., keep the fish day before you.

Local branches might well have a luncheon or dinner on Fish Day at which prominent speakers and the press should be present. Retailers should advertise their specialties, dress their windows tastefully, and have a plentiful stock on hand. **REMEMBER! THE PUBLIC WILL BE WELL INFORMED OF THE NATIONAL FISH DAY AND THE TRADE MUST BE READY TO CATER TO THEM.**

Special "stunts" and publicity can very well be left to your individual ingenuity. The foregoing is only an indication of what might be done to help the game along.

The Food Board are ready to send out any of their various pamphlets and posters on request. Their excellent Fish Recipe Book can be procured from Ottawa for 5 cents each. I would suggest that you invest in a number of these and distribute free to your customers.

Trusting you will get behind the Association in this matter, and make October 31st a permanent calendar date dedicated to our National Industry.

Yours sincerely,

A. H. BRITTAIN,
President.

P.S.—Write the Canada Food Board for one or two of their posters.

FISH CURING

By J. J. COWIE.

THE SMOKING OF HERRING.

Article III.

Kippers.

Herring in the form of kippers are a delicious article of food, provided they are produced from perfectly fresh fish and are not over-salted. They are intended for consumption within eight or ten days after being taken from the sea; but they may be kept for a much longer period in cold storage.

The production of a desirable kipper calls for the exercise of a great deal of skill. Any intelligent fish dealer, however, can, with some practice and much close attention to salting and smoking, readily become sufficiently expert to supply exactly what is required.

Beheading and Splitting.

This is the first step in the process of making kippers, and should be performed immediately after the herring have been landed.

With a sharp knife each fish is beheaded and then split down the back from shoulder to tail. The knife should run close to the bone. In removing the entrails see that the silvery gland or sound is not left in the fish.

In Great Britain, kippers are made and shipped to market with the heads on—a custom for which there seems to be no good reason. In Canada, the practice is to remove the head from the fish before salting and smoking.

Washing.

A large tub into which water is allowed to run constantly during the washing operations, is generally used for washing the split fish in. To permit the escape of the overflow water there should be a hole in the side of the tub near the top.

Washing is a simple process. A shallow basket filled with split fish is given a few quick turns to left and right in the running water of the tub and the washing is completed.

The flavour of the finished kipper would be largely lost were it allowed to remain longer in the water.

Pickling.

The fish, when washed, are placed in pickle which should be strong enough to float a potato. It is extremely important to have the pickle at all times of a uniform strength, by always dissolving the same quantity of salt in the same quantity of water. Any water tight receptacle, in the shape of a tub or tank, may be used for pickling.

The time allowed for pickling depends on the condition and size of the fish. While half an hour may be safely allowed for the average sized herring, ten to fifteen minutes longer should be allowed for very large fat fish. The pickle may be used more than once, but its strength should be tested and salt added as required.

Hanging.

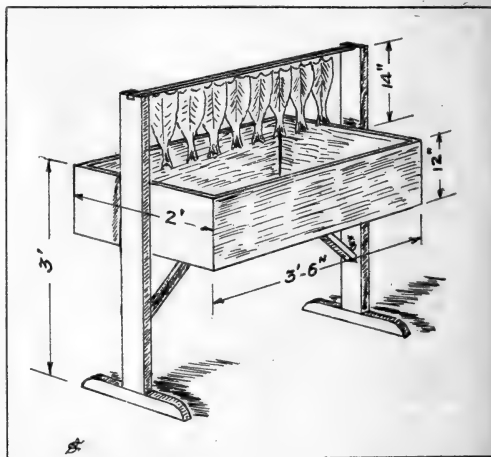
When the fish have been sufficiently pickled they are hung on what are known as tenters. A tenter is a wooden bar 4 feet in length, $1\frac{1}{2}$ inch in breadth and 1 inch in depth. In each of the 1 inch sides of the

bar there are galvanized iron hooks in pairs $3\frac{1}{2}$ inches apart, with $1\frac{1}{2}$ inch between each pair. To these hooks the herring are fixed with their backs to the bar, and spread to the full extent, one to each pair of hooks.

To make easy the work of placing the fish on the tenter hooks they should be lifted from the pickle into a light box, $3\frac{1}{2}$ feet long, 2 feet wide and 1 foot deep, standing about 3 feet high on upright supports at each end. The supports should be 14 to 15 inches higher than the upper edge of the box, and have a notch in the top of each to hold the end of a tenter bar. A person stands on each side of the box and fixes the fish on the hooks.

The bottom of the box should be such as would drain off any pickle that might accumulate in it.

The following sketch shows the box with tenter bar resting on the uprights and fish on the hooks.



The full tenters are then placed in the smoke-house. If there is a considerable distance between the pickling place and the smoke-house, frames in the shape of hand barrows should be used to carry the full tenters to the latter. The barrow may be large enough to carry about 10 full tenters. The following is a sketch of such a barrow.

In placing the full tenters in the smoke-house it is absolutely necessary to carefully see that each tenter is placed directly above the other. When the smoke-house is full, there should be seen, on looking from below, a distinct space straight to the top of the house between each tenter, otherwise the smoke could not readily ascend to the fish in the upper parts of the building.

The Smoke-House.

A smoke-house may be as large or as small as the smoker's business calls for. A wooden building about 15 feet from front to rear by about 9 feet in width, inside measurement, would have capacity for a moderate business.

The roof should be of the usual kind, sloping on both sides; i.e., to the front and rear. At the apex

of the roof and running its whole length there should be a row of ventilators on each side. The walls should be about 15 feet high from the ground to the eaves. A ventilator for each division should be placed in the front wall of the building, immediately below the eaves; and in the rear wall opposite those in front. The ventilators may be opened or closed by means of ropes inside the building.

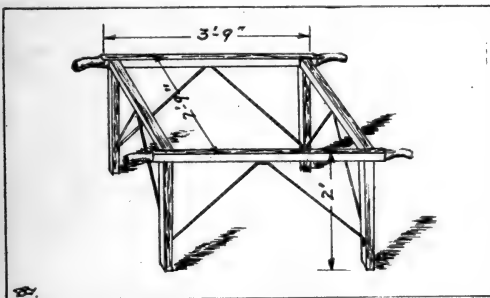
The door should be in two parts so that either the top half or the bottom half may be opened or closed at will in order to regulate the draught.

The floor of the building should be of brick or hard earth. Brick is preferable because frequent brushing would cause unevenness in an earthen floor.

On the inside walls running from front to rear and extending from 7 feet above the floor to the apex of the roof there should be rows of stringers 14 or 15 inches apart; and in the centre of the building running from front to rear double rows of stringers corresponding with those on the walls. The smoke house is thus divided into two sections from 7 feet above the floor to the top.

One end of the tenter bar would rest on a side stringer and the other end on a centre stringer. An equal amount of fish is usually placed in both sections.

The following sketch shows the type of smoke-



house commonly used for smoking either herring or haddock.

Dealers or others who find it necessary to smoke a few dozen fish only from time to time can, of course, produce a perfectly smoked fish in a very small building, say six or eight feet high by four feet by four feet, provided it is sufficiently ventilated and that the fish are prevented from getting too much heat.

The wooden walls of the smoke house should be covered with sheet iron up to three or four feet from the ground.

Smoking.

A small heap of hardwood chips, covered with sawdust, on the floor of the smoke-house produces the required heat and smoke for kippers.

Three such heaps in line from front to rear and at an equal distance from each other, should be placed under each division.

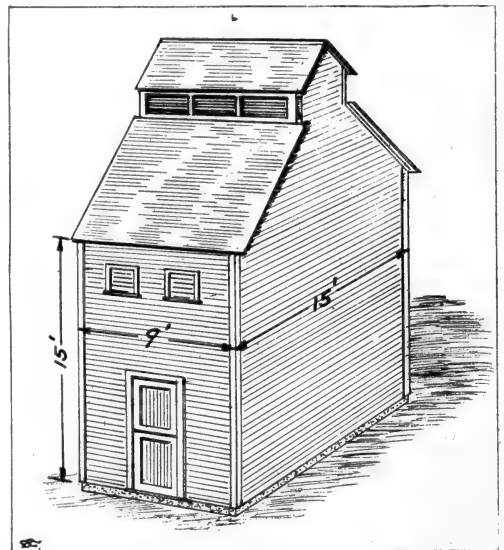
The person in charge of the smoking must watch the fires closely and prevent them from flaming up too high, and causing too much heat. A little sawdust thrown on the fire keeps the flame down. Some heat is necessary at the beginning, otherwise the fish will not colour properly; but if too much heat is applied the fish will drop off the tenter hooks.

As the fires burn off they should be replenished;

but less heat and more smoke is required after the first fires have been used up.

The fish hanging in the lower parts of the smoke-house will invariably be found to be fully smoked much earlier than those hanging higher up. These should then be taken down and the fires kept going until the others are ready to be removed. The finished kippers, as they are removed from the smoke-house, should be hung on suitable rails or racks and allowed to cool thoroughly before being packed. A number of barrows, such as are herein described for carrying the fish from the pickling house to the smoke-house, would serve admirably for cooling off the smoked fish.

Much attention has to be given to the matter of regulating the draught in the smoke-house. Various winds affect the draught differently, and unless the smoker knows how to use the doors and ventilators in order that a like volume of smoke and heat reaches all parts of the house he will find it difficult to secure satisfactory results.



The smoking of kippers should be completed in from 6 to 8 hours. They are usually marketed in a shallow box similar to that used for marketing "Finnan Haddies." They should be laid in pairs, face to face, in the box. Smokers should not forget that in order to build up and maintain a trade in kippers it is absolutely necessary that perfectly fresh herring be always used.

Soft or White Bloaters.

The original Yarmouth bloater of England is a lightly salted and lightly smoked herring—so lightly smoked in fact that it does not lose its white colour. These are intended for consumption within five or six days after preparation. They are the most delicious kind of bloater when split open and wiped, but not washed, and broiled. A soft bloater for consumption twelve to fourteen days after preparation may be produced by applying a little more salt and smoking until a bright yellow colour appears.

Pickling.

For the making of bloaters of all kinds, herring are pickled in the round state in which they come from the sea. The fresh herring should be placed in tubs or tanks, and evenly sprinkled with salt as they are being placed there. The tubs should then be filled with pickle of the usual strength, until the fish are afloat.

For white bloaters the fish should not be left in the pickle over six hours; for soft coloured bloaters they may be left in the pickle three to four hours longer.

Hanging.

Bloaters are usually hung on iron rods, 4 feet long and about the thickness of an ordinary lead pencil. Wooden rods are sometimes used, but these should be considerably thicker. One end of the rod is sharpened. The herring is spitted by entering the sharpened end of the rod under the gill cover and pushing it out through the mouth. All the herring on a rod must be spitted through the same gill cover, in other words, they must all hang with their backs one way. There should be a distinct space between each fish on the rod when it is full. The fish on the rod are washed by dipping them in water contained in a suitable box. The rods are hung in the smoke house in the same way as tenter bars previously described.

Smoking.

Hardwood billets alone, about three feet in length, are used for smoking white bloaters; the idea being to dry the fish, without imparting colour to them. Two such fires under each division of the smoke-house should be lit, and the same attention given to draughts as in the case of kipper smoking. Six hours in the smoke-house should be sufficient for white bloaters.

To produce a coloured bloater that will keep good for twelve or fourteen days, smoking should continue for about ten hours, or until the fish take on a bright yellow colour. Sawdust should be used on the hardwood billet fires to give the colour quickly. Bloaters are usually packed in rows in shallow boxes like those used for "Finnan Haddies."

Hard Bloaters or Red Herring.

As these are intended to keep good for an indefinite period, they must be more thoroughly cured in salt and more highly coloured and dried in the smoke-house than those described above.

Salting.

The most satisfactory way to salt herring for hard bloaters is by packing them round in barrels. The fish should first be well roused and turned over in salt, then packed in tight barrels in the ordinary way, tier on tier. Each tier should be separately and evenly salted. Two or three hours after packing, a bucketful of strong pickle should be added to each barrel. The packed barrels should be allowed to stand for a couple of days, and, if smoking is not immediately begun, be headed up and laid aside until required for smoking.

Steeping.

When it is desired to begin smoking, they should be taken from the barrels and placed in tubs or vats containing fresh water, for about 30 hours, if the fish have been ten days or more in salt, in the course of which the water should be changed. If the fish have been in salt for not more than six days, 6 or 8 hours'

soaking should be sufficient; if not more than three days in salt, a dip in fresh water is all that is required.

Hanging.

They should be hung on rods in the same way as white bloaters.

Smoking.

The fish should be allowed to drip or dry before fires are set. Hardwood billet fires should be used as in the case of other bloaters. After the first night's smoking the fish should be allowed to cool for twenty-four hours, and again smoked for that length of time and cooled. Sawdust should then be freely used and the fish smoked and cooled alternately until sufficiently hard and coloured. The smoking of hard bloaters takes from three to six weeks in conformity with the hardness called for by the market for which they are being prepared.

Hard bloaters are usually packed in rows in shallow boxes, but before packing they should be thoroughly cooled off.

A CALL TO THE EAST TO PRODUCE MORE.

Comparatively speaking, until a very few years ago, fresh or frozen fish from the Pacific Coast was entirely unknown in the market of the eastern cities. A very limited quantity of salmon and halibut commenced to find its way towards the east, followed by larger quantities of frozen salmon and halibut, which was obtainable at a much lower price than that at which Atlantic fish could be obtained.

In course of time, except at certain periods, for a very limited time, Atlantic halibut has been almost unknown, except in cities near the Atlantic Ocean.

Last winter frozen and salt herrings, also kippered herrings, cured by real Scotch lassies, were shipped from the Pacific, as far east, at least, as the Province of Quebec. Recently the first solid car of Pacific flat fish, containing about 25,000 pounds of soles and plaice, has been received in Ottawa.

The fish has for some time past found a ready sale in the great west, but surely it is something entirely unthought of a few years ago, that the east would have to depend on the west for a considerable proportion of the sea food consumed.

On the face of it, it looks like lack of production on the part of the Atlantic fishermen, for we have been told by those who should know, that the fish in the Atlantic were only waiting to be caught, and that the supply was boundless.

It must not be overlooked that although the charges for transportation on fish from the Pacific is naturally must dearer than from the Atlantic, the Pacific fish are being laid down in the East, at as low, and in some cases lower prices, than the Atlantic fish.

If our fishermen on the Atlantic wish to supply the increasing demand for salt water fish, they must take steps to produce infinitely more than they have done in the past

O
O O
O "Remember, Thursday, October 31st—Can- O
O ada's National Fish Day!" O
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Steam Trawling in Eastern Canada

By F. WILLIAM WALLACE, Fish Section, Canada Food Board.

Trawling by means of the beam trawl was first introduced by Scotch and English fishermen in 1837—the year Queen Victoria ascended the throne. Some authorities say it was used by Brixham trawlers 100 years ago. Up to 1880 the beam trawl was operated from sailing vessels. Around that date, beam trawling from steam vessels was introduced, and I understand the first trawlers were paddle steamers. The otter trawl, such as is used by the steam trawlers of Canada and the United States to-day, was first used in British waters in 1888.

Steam trawling was first introduced into Eastern Canada in December, 1897, by Messrs. A. N. Whitman & Son, of Canso, N.S., who bought the wooden steam trawler "Active," of Aberdeen, Scotland, and after fitting the vessel out with otter boards and trawls, which they made themselves from descriptions received from Grimsby, they operated the boat out of Canso under the command of Captain John Cousins. This pioneer enterprise was not successful, as both the trawl and the vessel were not suitable for the work, and the "Active" fished for a while with dories. Prior to this and in the same year, the Whitmans operated the steamer "Seabird," as a dory fisherman.

In 1908, the same company purchased the Grimsby steel steam trawler "Wren." She arrived from England on June 24th, under the command of Capt. John J. Smith. On June 29th she landed her first catch—some 30,000 pounds of mixed fish—after twenty hours' fishing on Middle and Banquereau Banks. Her crew

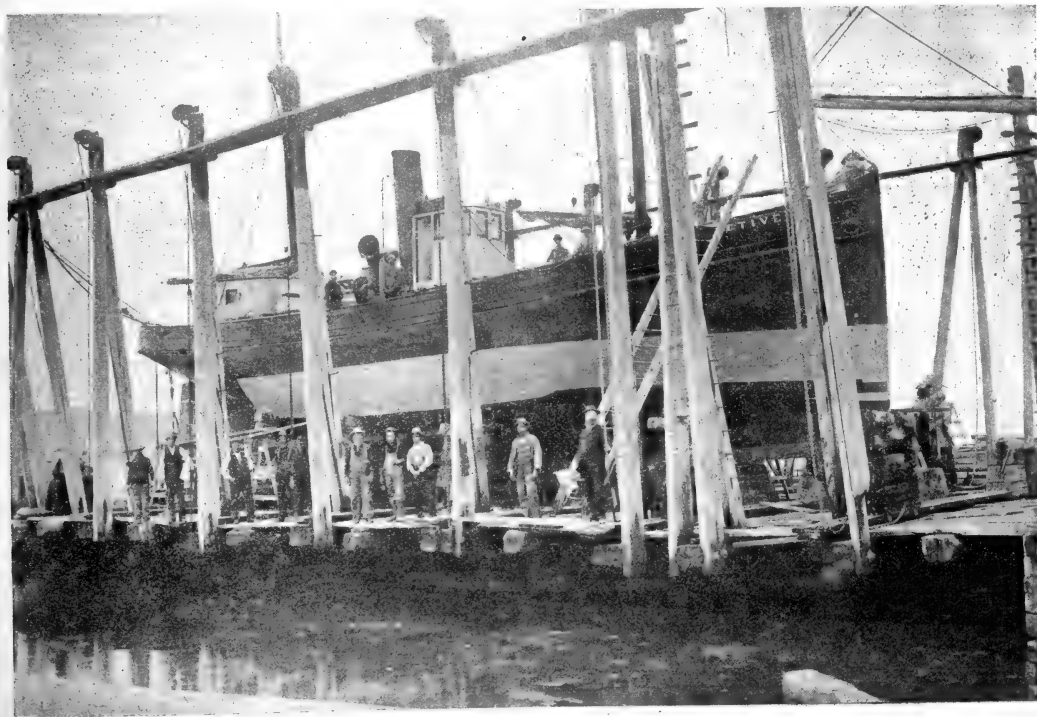
remarked that they never saw better fishing, and predicted success for the enterprise.

Great opposition to steam trawling raged along the coast when the "Wren" came out, and it was made a party question during local and Federal elections. The local fishermen looked none too kindly on the innovation, and all sorts of dire prophecies were made as to the results of introducing the steam trawler into Canadian waters.

In 1910, the "Wren" passed into the possession of the Maritime Fish Corporation, Ltd., when that company bought out the Whitman plant at Canso. The trawler was operated for a period by them under several masters, but as she was a small, obsolete craft, and unfitted for winter fishing, they tried her out as a dory fisherman, and finally disposed of her.

In August, 1910, the steel trawler "Coquet," owned in Aberdeen, Scotland, arrived in Canso to investigate the possibilities of Canadian fishing. She was a small craft of the "Wren" type, and was, like her, unfitted for fishing on this side of the Atlantic. She ran her trips into Canso for about two years, and finally went back to Scotland.

Up to 1911, steam trawling out of Nova Scotia ports was not a financial success owing to the small, obsolete types of vessels employed. Experience in these craft showed that for fishing in our waters only the finest type of North Sea or Iceland trawler would be successful. Then again, the trawling grounds were not well known to the skippers, and experiments in finding them were costly.



Wooden Steam Trawler "Active" on Marine Railway.

On July 8th, 1911, the Grimsby steam trawler "Cambodia," under the command of Capt. Martin Olesen, arrived in Canso. She had been sent out by her owners to investigate the fisheries of Eastern Canada. The "Cambodia" was a modern trawler, full powered and around 140 feet overall. Capt. Olesen entered into a contract with the Maritime Fish Corporation, Ltd., to land his catches at their Canso plant, and working under the directions of Capt. H. F. Robinson—the Maritime's Canso manager—the "Cambodia" trawled on the right grounds, and was successful from the start. Her first catch of 50,000 pounds of mixed cod and haddock was landed on July 14th, 1911. The "Cambodia" is probably the first trawler to operate successfully out of Nova Scotia ports.

Prior to all the ventures outlined, steam trawlers from France and England fished on the grounds adjacent to our coasts, but they did not operate out of our ports or sell their fish to our market. In most cases, they salted their catches and marketed them in France and England.

In 1912, four English trawlers of modern types operated out of Nova Scotia ports, and sold their catches to Canadian producers. These were the "Cambodia," "Carmania," "Earl Hereford" and "General Gordon."

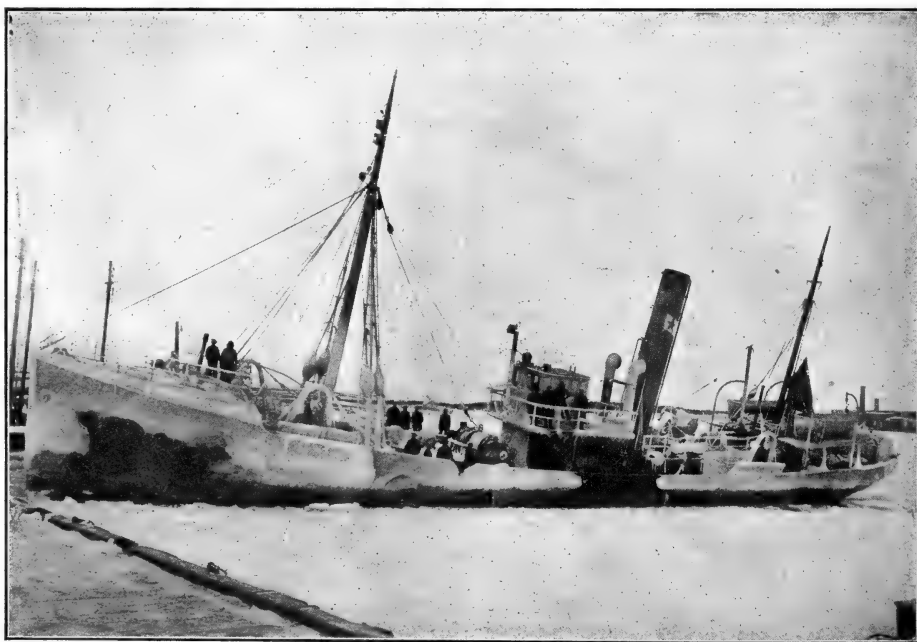
In 1913, Capt. Olesen brought the steam trawler "Rayond'or" out from Grimsby and fished for the Maritime Fish Corporation out of Canso. This vessel soon became a high-liner, and was latterly purchased by her skipper. About the same time, the French built steam trawler "Baleine" was purchased by the Lockeport Cold Storage Co., Lockeport, N.S. When the war broke out in 1914, the "Baleine" was chartered by the Naval authorities and used as a patrol vessel.

Since the outbreak of war and the development of the market for fish, Canadian producers in Nova

Scotia began to purchase trawlers to increase their production. The Maritime Fish Corporation, Ltd., purchased the "Rayond'or" from Capt. Olesen in 1915. The National Fish Company, Ltd., of Halifax, purchased the steam trawler "Triumph" from Messrs. Olesen and Jemsen in 1916. This craft was English built, and had been out on the Pacific Coast for some years. In 1917, Messrs. A. & R. Loggie, of Port Hawkesbury, N.S., bought the steam trawler "Orontes" from the Wallace Fisheries, Ltd., Vancouver, B.C. In 1918, the Leonard Fisheries, Ltd., purchased the "Baleine" from the Lockeport Cold Storage Co., Ltd., and secured her release from Naval Service.

At the present time, the trawler "Rayond'or" is operating out of Canso. She is an up-to-date trawler of the finest type, 140 feet overall. Leonard Fisheries trawler "Baleine" is an even larger craft—165 feet overall—and modern in every respect. She is operating out of Port Hawkesbury, N.S. The National Fish Company's trawler "Triumph" was captured and latterly destroyed by a German submarine on August 22nd, 1918. The "Orontes" is 125 feet overall, and is operating out of Mulgrave, N.S. In addition to these three trawlers, the Iceland trawler "Ran" is operating out of Canso under contract to the Maritime Fish Corporation, Ltd. The "Ran" was built in 1915, and is 135 feet overall. The average trips of these craft are from 80,000 to 100,000 pounds of fish per week. It is not common for trips of 225,000 to 300,000 pounds to be landed by the larger trawlers.

The National Fish Company are replacing the "Triumph" by a new steel trawler now being built at Quebec. It is reported that several wooden trawlers are being built in Nova Scotia and New Brunswick. With these additions to our steam trawling fleet, Canada's east coast fish producers will be able to keep pace with the ever-growing demand for fish in regular supply.



Sea Fishes of the North Atlantic

By HON. WILLIAM E. MEEHAN.

Former Commissioner of Fisheries of the Commonwealth of Pennsylvania—Superintendent of the Public Aquarium, Philadelphia—Author of Fresh Water Fish Culture in Ponds and Inland Waters—History of Fish, Fishing and Fisheries of Pennsylvania—In Arctic Seas, Part 2—The Battle of the Fishes, Etc.

(Continued from the July Issue.)

CHAPTER V

COD FISH FAMILY.

"Cod fish aristocracy," is a term once frequently applied to certain self-made families trying to push into inner social circles. Consciously or unconsciously as far as lack of known ancestry is concerned, the slurring phrase has a point of aptness. Nothing is known of the line of descent of Cod, and from a geologist's standpoint its appearance among the family of fishes was in modern times. Even the Salmonoids, which is called a new family, have their ancestry several million years farther back in the world's history. Apparently the Cod family came into being during Eocene period, but this is not positive, since certain fossil remains thought to be those of the family have not been definitely determined.

Like other modern families, that of the Cod is large. It contains 25 genera and 140 species. Nineteen of the genera and approximately 36 species are in American waters.

If "Cod fish aristocracy" was applied as a term of reproach to ambitious humans because of their lack of pedigree, it may be equally considered as one of honor, for the Cod family is one of the greatest importance among fishes. It is so important that nations have quarreled and, at least on one occasion, numbers of men of two countries came to blows over the fishing rights for it. Nearly all the species are valuable food fishes, and two, Cod and Haddock are the choicest.

A peculiarity of the Cod is, that most of them have ten fins instead of seven possessed by a majority of fishes. They have three dorsals, two anals, one caudal, two ventrals and two pectorals. Originally the Cods were undoubtedly all strictly bottom fishes, and fed exclusively on small mollusks and small aquatic creatures that live in the bottom mud. To assist in the search for food nature gave to each a barbel attached to the under part of the lower jaw. Later some of the species rose higher in the water and took to feeding on small fishes and in process of time, these either lost the barbel entirely or became greatly reduced in size.

With very few exceptions all Cods are dwellers in the colder seas and sometimes at great depths. There is one genus found in cold fresh water. This is the *Lota Maculata*, locally called Eel-pout, Burbot, Ling, and Lawyer. Unlike most of its relatives, its flesh is of very inferior quality.

The most important members of the Cod family found in North Atlantic waters are: Common Cod fish, Haddock, Common Tom-Cod, Common Pollock, White Hake, and Squirrel Hake.

Feeding habits of the family are interesting and

varied. Both Common Cod and Pollock hunt their prey chiefly in the daytime. The former is assisted in the search by their barbels, while the latter depend on sight alone. Hake come to the surface to feed and then only at night, resting quietly on the bottom during daylight hours.

The Common Cod.

Common Cod has played a mighty part in the political and economical history of North America. It was the existence of this fish in vast abundance, that furnished the chief reason for England's establishing colonies in America, and ultimately taking Newfoundland from France. Indirectly, therefore, it is possible that had it not been for the presence of Cod and the value of fisheries, the free and independent United States of America might never have come into being.

Early colonists considered Cod of such great importance that, in the northern regions the fish was portrayed on coins, medals and seals. It is pictured on a Nova Scotian coin; is on the seal of Massachusetts and on its colonial coinage.

The superstitious have enfolded the fish in their category of mysteries affecting human kind. They say that anyone who carries about his person the small bones of the head of a Cod will have good luck. It is believed by fishermen that Cod can foretell the coming of a storm and that before one occurs they swallow stones as ballast to keep them firmly on the bottom until the fury of the tempest has passed. A dried Cod-fish when hung in the air is an infallible barometer, indicating coming rain by becoming moist.

Cod fish is one of the comparatively few species of fish found alike in both the Atlantic and Pacific oceans. This is doubtless because of its love for cold water, which enables it to make the journey from one ocean to the other by way of the North Pole.

It is said that Cod although a salt water fish, and not even of anadromous habit, sometimes ventures into fresh water and remains there for lengthy periods. They have been found in branches of the St. Lawrence and Delaware Rivers, and according to reliable authorities it appeared in the St. Johns River, Florida, on one occasion. Its natural habitat is from shore to deep water, but favored grounds are on the Great Banks, and it is there that fishing fleets go for the bulk of their catch.

There is much diversity of opinion with regard to the assembling of Cod. Some close observers declare that it is not a school fish, others say that it schools throughout the year, and others that it has the habit for at least ten months. Evidence is very strong, however, that Cod is not a true school fish, but merely found in great numbers in certain localities because of an abundance and uniformity of food on the bot-

tom. In support of this it may be pointed out that true bottom feeding fish seldom do school, excepting perhaps when they assemble for spawning purposes, and Cod is almost exclusively a bottom feeder. It is also noticeable that Cod found near the shore, or "Shore tenders" as they are called, are greatly scattered and live solitary lives among rocks and seaweeds. Dr. Goode says "they are ordinarily met with moving about independently. They are most likely to occur in great numbers in places where food is most abundant. At certain seasons of the year they are brought together by a common desire for wandering together from place to place in immense bodies, sometimes their object being a united attack upon some special kind of food only to be found at that season, and in particular places."

Cod grow to a large size. Specimens have been caught measuring over six feet in length and weighing over 200 pounds. This, however, is an abnormal size and weight; it is not often that any are caught weighing over 75 pounds, and Bank Cod average from 20 to 35 pounds.

Cod are wonderfully prolific, and if all the eggs which are deposited yearly were fecundated and hatched, and the young grew to maturity, they would soon become so numerous that the ocean could not contain them. A 74 pound Cod will yield more than 9,000,000 eggs, and an average sized one will yield about 3,000,000. They are so small that it requires 337,000 to fill a quart measure. They are buoyant and as soon as estruded, rise to the surface, where they float until hatched. A large percentage are not fertilized, and vast numbers are devoured by spawn eating creatures.

Incubation is completed in from ten to twelve days, and the little Cod shift for themselves as soon as they emerge from the egg. Almost immediately they seek places that will shelter them from their numerous enemies. This they find under jelly fishes and floating seaweed. Here also they secure abundant food suitable to their needs, increasing rapidly in size and weight. Jelly fish and sea-weeds shelter them for several months, when they make their way close inshore, remaining for three or four years among rocks and algae.

Gadus, the first or generic name of Cod, is that by which it was known to the ancient Romans, and the specific or second name callarius means "young Cod." Fishermen have a multitude of names usually to indicate the locality where they are found, or some peculiar characteristic of the fish, as for example: Rocklings, Rock Cod, Shoal Water Cod, Shore Cod, Inshore Cod, Worm Cod, Clam Cod, Black Snappers, Black Biters, Brown Cod, Ground Keepers, Herring Cod, Pine Tree Cod, and Red Cod.

The Common Cod is elongate in form although not slender, for it is rather deep and chunky back of its head to the front of the first anal, tapering rapidly to the base of the caudal. Its head is large with the top gently rising to the line of the back. Its mouth is large, the anterior part extending beyond the front of the eye. It is also provided with teeth, not of a formidable character. There is a single well developed barbel at the forepart of the under jaw. Each of the three dorsals and two anals are separated, and the caudal is only faintly forked. All are dark colored. The lateral line is light in color and in large specimens not very distinct. The scales are small.

Its color varies greatly according to location and

food, brownish and greenish predominating. Sometimes they are yellowish or reddish, and both the back and sides are thickly covered with small round brown spots. Cod fish is one of the great commercial fishes caught almost exclusively with hook. The principal method is by trawl lines baited with fish or squid. Trawl lines are merely a sea fisherman's name for the fresh water outline or set line. They are generally buoyed and of such great length that often they have a thousand or more hooks attached to each.

There is little or no sport in fishing for Cod, because it lacks game qualities. When hooked it is hauled in by main strength, and it makes scarcely any resistance. Sportsmen rarely seek Cod, especially those on the Banks, since the season is the most forbidding of the year, and the months when the ocean is in its most rurlly mood. While it is not a sportsman's fish, yet more than 7,000 men risk their lives, and undergo hardships to secure the more than 100,000,000 pounds of fish brought to the markets yearly, and share in the more than \$2,000,000 which the flesh brings.

Common Pollock.

Occasionally individuals are found among human families who, with or without reason, fear or dislike one or more of their relatives. A similar situation is found among fishes. Common cod, for example, has good reason to fear its cousin the Common Pollock. Although the mature of both are found together, the younger cod must keep a sharp lookout lest they find themselves making an unpleasant journey into the insides of a hungry Pollock, which is a voracious fish and seems to have a special weakness for the young of its more inoffensive relative. It exhibits wonderful skill and cunning in rounding up a school of young Cod to satisfy its appetite. Thousands of hungry Pollock with gather and surround a school of little Cod, and by rapidly converging circles herd them into one thick bunch. Then, by another quick movement, force them to the surface where the "poor little fish find themselves attacked on all sides; below by the voracious Pollock, and above by hundreds of screeching sea gulls," that have been attracted to the spot by the commotion. Often between the two, almost an entire school of infant Cod will be wiped out of existence.

Young Cod are not the only choice food for the Common Pollock, they are almost equally fond of sand eels, and display quite as much ingenuity and determination in capturing them. They also have a weakness for squid and young fish of almost any species.

While the Common Pollock will not refuse food wherever found, it is chiefly a surface feeder, and owing to its voracity and strength possesses pronounced game qualities, consequently it is eagerly sought by anglers along the New England coast. They are fished for among rocks and in open bays where they are caught both with bait and artificial flies. Only the smaller fish are caught by the latter means, since the larger usually keep near the bottom except when on one of their maurading expeditions. Smaller fish, up to four or five pounds, take an artificial fly with as much energy and snap as a Sea Trout, and whether taken by fly or bait the Pollock puts up a prolonged and vigorous fight that almost equals that of a blue fish.

Pollock are caught for market chiefly with hook and line, and one of the methods employed is both in-

teresting and exciting and not unworthy the attention of a sportsman angler. A number of seven feet poles are fastened on each side of a sailing vessel, and to the ends of these are fastened lines weighted with bright lead weighing from half a pound to a pound and a half. Hooks are attached and baited with strips of the bright undersides of a Pollock. The vessels in sailing keeps the bait in motion like a live fish which the Pollack seize eagerly.

The scientific name of the Common Pollock is *Pol-lachius virens*, the generic name being derived from its best known common name and the specific from the greenish color of the body. It has probably a hundred or more local names in different parts of the world, among which are Green Cod and Coal fish. In Germany it is the Kohler, and in Norway and Sweden the Sei. There is another species found in English waters to which the name Pollock, is given, but it differs materially from the species found in North America and popularly known as Pollock.

It is of great importance as a food fish and brings on the average as good a price as the market Cod. While not universally as highly esteemed as Cod, the flesh when perfectly fresh is of fine flavor, white, firm and flaky. Unfortunately all these qualities do not remain as long as with certain other fishes. It soon loses its high flavor and becomes coarse.

The liver contains a large amount of oil said to be equal medicinally to that of Cod liver. Accepting this as correct, the allegation that Pollock liver oil is often used as an adulterant of Cod liver oil, is not likely to excite much indignation.

The Pollock is a cold water fish, but while often found associated with Cod, it does not range as far north or south, and is most abundant along the New England coast, being not uncommon off New York, and occasionally found as far south as New Jersey. It rarely exceeds four feet in length, nor much over 25 pounds in weight; the average weight is between ten and twelve pounds. Although its maximum length is less, the growth of Pollock to maturity is much more rapid than Cod. This doubtless is due to its greater voracity. While it resembles Cod in a general way, yet it is much darker in color and the lower jaw is longer, projecting slightly beyond the upper. Its barbels when it has one, is on the tip of the lower jaw and always smaller than that of a Cod. Very often the barbel is entirely absent, for that necessary appendage to the Cod is not needed by the surface feeding Pollock.

Breeding habits of the Pollock are identical with those of Cod. Its eggs are frequently found floating among the spawn of the latter, but are easily distinguishable on account of their smaller size. The period of incubation is from five to six days.

Haddock.

On one occasion when it came time for the Jews to pay the annual tribute to the Roman tax gatherers, our Saviour found himself without money. He rebuked a follower who advised him to refuse to pay and directed Peter, his fisherman disciple to cast his net in the Sea of Galilee. He was obeyed, and on the first haul there was captured a huge Haddock. Under further direction Peter seized the fish by the gills, thus forcing its mouth open. Within was a coin of a denomination sufficient to pay the tribute tax for himself and twelve disciples.

Money having been secured, the fish was liberated and swam away, but its descendants to this day retain

black spots back of the gills made by the fingers of St. Peter when he forced the ancestral fish to open its mouth and disgorge the money.

Such is a story of the Haddock, handed down by generations and believed by thousands of people to this very day. Unfortunately, unless the fish has entirely changed its habitat since the days of Christ, it could not have been a Haddock that figured in the miracle, for nowadays no species of Haddock or any of its relatives is found in the Sea of Galilee.

Although it belongs to the Cod family, the Haddock is of a different genus. Its scientific generic name *Melanogrammus* is derived from the deep black lateral line which curves gracefully from the rear of the gill covers to the recurved caudal fin. The specific name is *aeglinus*.

While the general outline of the body is similar to that of the Cod, it differs markedly in other respects. Its mouth is smaller, reaching only half way to the line of its eyes, its barbel is much smaller and a high front dorsal is sharply recurved at the back. Its back and upper sides are dark gray, with the lower part of the sides and belly whitish. Just above the pectorals on each side are the dark blotches which have given rise to the legend that this fish is the one which figured in the Biblical account of Christ and the tribute money. Three dorsal fins and the caudal are all of a dusky hue. It is not a very large fish, considering the size of some other members of the family, averaging only from five to ten pounds, although fish weighing fifteen pounds are not unusual.

The range of Haddock is restricted in the Atlantic waters of America to the region between the Straits of Belle Isle and Cape Hatteras, although in the latter region it remains in deep water. Haddock are generally as abundant for brief periods along the New England coast as the Cod with which they mingle freely. It is, however, erratic in its habits and movements. Some years they are plentiful and in others very scarce.

Although a cold water fish, Haddock likes a little higher temperature in summer than Cod, consequently they enter the New England Bays, notably Massachusetts Bay, early in summer, coincident with the departure of Cod to colder waters of the Great Banks.

Haddock spawn from May to June, and as with other members of the family, its eggs are buoyant and yielded in large numbers. One million eggs to a single female is by no means unusual.

Haddock rarely feeds on the surface. It seeks most of its sustenance on the bottom, devouring anything edible. It is particularly fond of mollusks, and for this weakness the Germans have named it *Schellfisch*. It is called *Dickie* in Connecticut; *Egrefin* in France; and *Haddie* in Scotland.

Haddock does not appeal to the sportsman angler, its movements are sluggish and it is not even as powerful as Cod. It is caught, however, with hook and line by commercial fishermen in the same manner as Cod.

Tom-Cod.

Early in the winter months there comes to the shores and ascends the rivers of New York and New England for a long distance an active and medium sized fish eagerly sought by fishermen and readily sold in the markets. Because of its invariable appearance with cold weather in the bays and rivers, it has been named *Frost fish*. Otherwise it is the familiar *Tom-cod* (*Microgadus tomcod*), a member of the Cod fish

family, with an ocean range from Labrador to Virginia. Its snout is rounder and its olive brown body is covered with darker blotches and spots, and it has a perfectly formed barbel under the lower jaw.

Tom-cod rarely exceeds a foot in length and feeds eagerly on crustaceans, mollusks and small fishes. Its annual migration shoreward and into the rivers is for the purpose of reproduction, and its generic name *Microgadus* means small cod. It is a good pan fish but its flesh is soft; to the taste of many it has but little flavor. Sportsmen do not highly esteem it for angling purposes, although it takes the hook readily, its fighting qualities are not high.

The Codlings.

There are in the Cod fish family about half a dozen species of fish in a genus called the Codlings. In some respects they differ so materially in externals from the remainder of the Cod fishes that they might be considered by some as belonging to another family, or at least a sub-family. For example, instead of three distinct dorsal fins they possess but two, and instead of two anal fins they have but one. Moreover, the ventral fins have been pushed forward until they are ahead of the pectorals, and have degenerated into two or three long filaments. All possess barbels, since they are strictly bottom feeders, but in some of the species they are only just visible. In addition to the peculiarities mentioned that distinguish them from other members of the Cod family, most of the Codlings have a long filament on the front ray of the first dorsal.

Codlings of various species are found more or less abundantly from Nova Scotia to South Carolina, some of them at certain times of the year come inshore, while others appear to remain generally in deeper waters off the Banks.

While different species are found in some abundance in the territory mentioned, only two are considered as of any considerable value for food purposes, and these belong to the New England coast. Here these fish are known chiefly as Hake, and this name belongs more properly to them than to the King fish which frequent the coast below New England.

The two species most sought by commercial fishermen are the Common and the Squirrel Hake. Millions of pounds of these are caught annually by hook and line for the market. As a food fish the codlings are inferior to other Cods, yet tons are annually converted into "boneless Cod," and "shredded Cod." It yields a valuable oil and its air bladders or sounds are considered edible, and are also made into a fine quackering glass and glue.

All the Codlings are strictly bottom feeders and hunt their food principally at night, favoring crustaceans, small mollusks, squid and little fishes. They do not average a large size, rarely exceeding five to ten pounds, although occasionally, it is said, that specimens as heavy as 40 pounds have been captured. The spawning season is in the summer.

Both Squirrel Hake (*Phycis chuss*) and White or Common Hake (*P. tenuis*), the two chiefly sought for food purposes, spend the summer months on the muddy bottoms of the ocean off the New England coast, and the winter along its sandy shores. Outlines of the head and body of the two species are similar, but other characteristics are so marked that it is easy to distinguish one from the other. Squirrel Hake has a brownish body with a short filament on the front of the dorsal, and the filament like ventrals extend but

little beyond the extremity of the pectorals. Also the lateral line is very faint. The Common Hake on the other hand has a decided brown body, its dorsal filament is long, nearly one-fourth its length, and the filamentaceous ventrals extend beyond the vent and part of the frontal end of the anal fin. The lateral line is dark.

King Hake (*P. regius*) while of little value as food, is unquestionably the most remarkable of all the Codlings. It along of the half dozen species, possesses electrical powers, and is said to be able to administer a severe shock. It is one of the smallest of the group, rarely exceeding twelve or fifteen inches, and is more or less abundant all the way from Nova Scotia to Cape Hatteras. It is without a filament on the dorsal but the filamentaceous ventrals are both long and heavy. Its body is a yellowish brown and the lateral line is as dark as though drawn with a pencil. At regular intervals along the lateral line are round white spots. The first dorsal is tipped with dark brown and the base of both the dorsal and anal are of a lighter shade of the same color. Very little is known of the habits of this fish.

Earl's Hake (*P. Earli*) is another species little known. Like the King Hake, it is without a dorsal filament and its ventrals are similar. With these two exceptions the two fishes are quite dissimilar. Its scales are much smaller, its front dorsal stands more erect and is sharply recurved in the rear, and the lateral line is heavily curved and pale. The body is brownish but plentifully sprinkled with irregular shaped pale blotches.

Chester's Hake (*P. Chesteri*) is comparatively a recent discovery being found first between 1870 and 1880 by the United States Fish Commission while dredging with trawl nets off the New England coast. It has much larger eyes than the other codlings and a graceful body outline. It is easily distinguishable by its extremely long filaments which, on the first dorsal are nearly as long as the second dorsal, while those which constitute the ventrals reach nearly to the caudal. The second dorsal and the anal are edged with a narrow band of dark brown, and both these fins are gracefully curved.

Cusk.

The Cusk is so rare south of Cape Cod that few people south of Northern New England are acquainted with it, some works on North American sea fishes do no include it in their lists, yet it is an excellent food fish, not much if any inferior to some of the other members of the Cod family. It is called a deep water species although in extreme northern New England it is frequently caught from the rocky ledges near shore.

Cusk (*Brosmus brosme*) is erratic in its movements, appearing in considerable numbers some years and then absenting themselves in others. As with most Cods the Cusk is a bottom feeder, living chiefly on mollusks and small crustaceans. Its spawning season is supposed to be in the spring.

In some respects the Cusk may be classed as a game fish. The angler who undergoes a week or two of experience with it without broken tackle may be considered as lucky. A Cusk takes the hook with a rush that in itself is perilous to the line and rod; but this is nothing to that which frequently follows. It is said that the fish once hooked, will endeavor to twist the tail of its eel-like body about a jutting piece of rock

and hang on with such tenacity that it is difficult to dislodge it. While so clinging it gives savage tugs with its head in the endeavor to tear the hook loose. When finally the Cusk is beaten and brought to the surface "the skin rises from the body in great blisters." Commercial fishermen regard this peculiarity as a favorable sign showing that the fish are "thrifty" or healthy.

Cusk is eel-like in shape with a single dorsal extending unbroken from the back of its head to and connecting with a round caudal. Its anal fin is similarly connected with the caudal and is about two-thirds as long as the dorsal, which with the anal fins are edged with a whitish color with a narrow ribbon of black below. Its head is long and narrow, and its mouth is large, armed with small sharp teeth. Its body is brownish and generally mottled with a yellowish color. During the early part of the last century Cusk was almost universally called Tusk, and from this a well known rock in the Gulf of Maine receives its name. Another fish closely allied to the Cusk but an inhabitant of fresh water is the Burbot or Eelpout (*Lota Maculosa*.)

Silver Hake.

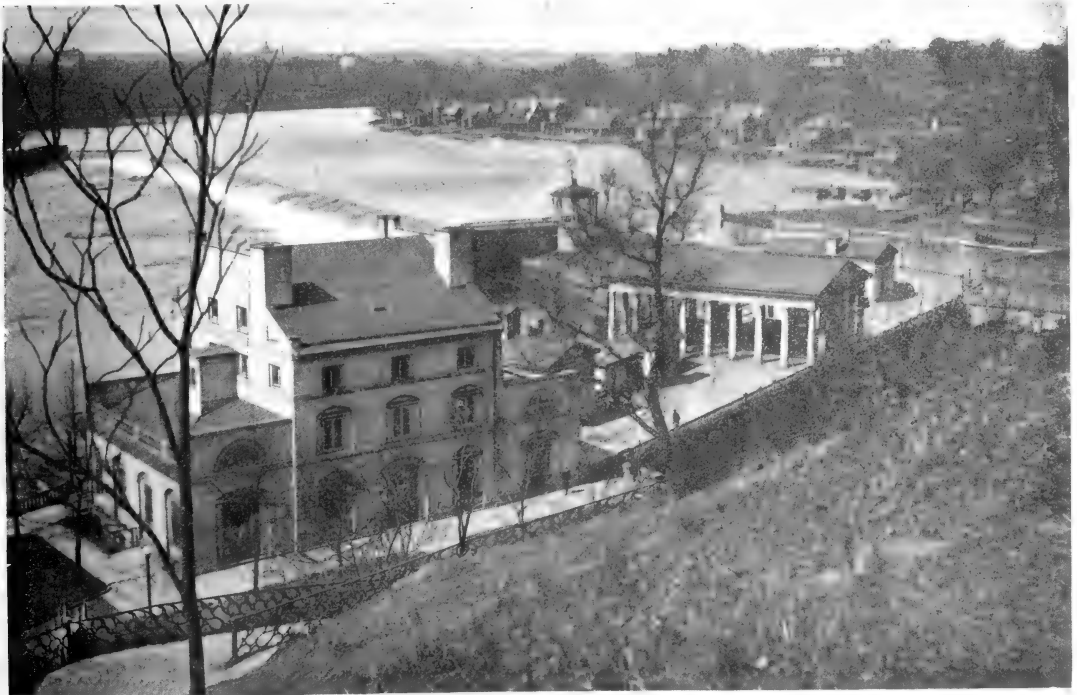
The Silver Hake (*Merluccius bilinearis*) found from Virginia northward is sometimes separated from the Codfishes and placed in a family of its own under the popular name of Hakes. As a matter of fact the arrangement of their fins are more in conformity with those of the true Cods than the Codlings and the Cusk, having three dorsals and two anals. Silver Hake, otherwise called the New England Whiting is a long

symmetrical shaped fish, having a pointed head with a large mouth and sharp teeth.

It is pronouncedly a fish of prey and receives its name *Merluccius* or Sea-Pike because of its voracity. Its narrow outlines and swiftness of motion. The body is a dull silvery with the lateral line nearly straight and dark in color. In its feeding habits it follows the Pollock by feeding almost exclusively on the surface. Here it wreaks destruction among schools of herring and other small fish, although it does not average much over a foot in length.

The Silver Hake is of a roving disposition appearing suddenly in certain localities for a year or more and then as suddenly departing for some other place. Although a surface feeding fish, the Silver Hake remains usually in what is called the middle depths of the ocean or the outer edge of the continental slope. At times, however, they enter the New England Bays in great numbers where they are caught with nets and with rook and line. As an angler's fish the Silver Hake puts up a vigorous fight and gives keen sport on the rod. The flesh is sweet and palatable when fresh, but is soft and deteriorates so rapidly that as a shipping market fish it is of little value.

O
O "Remember, Thursday, October 31st—Can- O
O ada's National Fish Day!" O
O O
O O



(2) Philadelphia Aquarium Grounds and Buildings Fairmount Park.

A Plea for Fish Production in our Lesser Lakes

By J. B. FEILDING, F.Z.S.
(Late President British Fish Breeders' Association.)

The question of the fish producing capacity of our smaller lakes, scattered for the most part over practically barren lands, is one that appears to have been very much overlooked. Why this has been so is difficult to understand, since one would have thought even the railway companies would have done something to stimulate freights from points where these are within agricultural, mineral, or timber developments.

Again, there are many large areas of water that have been for years looked upon as sporting waters and reserved for holiday makers and tourists, though I fear these waters hardly justify the title of sporting waters, seeing that they are for the most part very sparsely stocked with "sporting" fish and produce no market fish.

We are now faced with the problem of human food production—food in particular rich in protein—the most expensive element in any food to produce.

As has so often been said before, fish cultivation absorbs less capital and less labour than the production of either meat or cereals. No effort should therefore be spared by which fish can be produced cheaply, not only so far as the actual cost of propagation is concerned, but also distribution to the people.

Hitherto our energies have been spent to a great extent, if not entirely, on the development of our fishing interests on the Great Lakes—waters over which we have not sole and complete control, and which, in relation to their total acreage, do not contain the same proportion of fish producing grounds as do the lesser lakes. Prof. Paul Reighard of Michigan University tells us after careful survey of known facts, that, in his opinion, of the 91,000 square miles of water contained in the Great Lakes, only 25,700 square miles, or 28 per cent, can be termed white fish producing.

Has the railway passenger ever stopped to think when travelling northwards and westwards between Toronto and Winnipeg, whether the hundreds of small lakes adjacent to the railway produce anything at all? Indeed, is there anybody who can give us a concise description of these lakes other than their approximate geographical position? We often wonder whether at a future date any of that vast and rocky land in Algoma, Thunder Bay and Rainy River districts will ever produce anything of economic value? Railways have been pushed through those districts in all directions in order to reach more distant fertile parts, but surely some effort could have been made to collect produce in transit through these barren areas. I venture to state that there are few, if any, areas in the world so well provided with railway accommodation producing so little.

Let us look at the question from another aspect. Is it not true that our great sources of sea fish have such great distances to travel to Central Canada that, by the time it reaches the ultimate consumer, there are excessive freight charges to be met out of all proportion to the value of the commodity? It is true, we still

have our great lakes to supply Ontario and the Prairies, but here we are met with competition with the thickly populated districts across the Border to the south, and there is not enough to go round unless sales are regulated by the authorities. Hence prices have gone up—they say in sympathy with cereals and meats—but such is not a correct view to take since, unlike cereals and meat, very little, if any, lake fish of the class referred to are exported to Europe. It is admitted, of course, that fish is used now more in substitution on this continent. Prices of fish appear to me to be governed, so far as inland waters are concerned, much more by the supply than anything else. Only recently have two or three of our minor lakes been opened to limited fishing with very disappointing results for reasons not far to seek, namely, we know nothing of them biologically. In any case their output has hardly, if at all, been felt on the market. The labour problem cannot be raised for we have lots of fishermen anxious to acquire licences.

Fish is still a dearer food to the consumer in rural districts, and indeed in the towns of Ontario and Central Canada, and until we can get it cheaper and fresher so long will meat be held at home, however much it may be called for on the other side of the Atlantic.

Now let us leave the academic and look at the practical issues involved. Let us tabulate the main points, briefly:—

1. Most of our lesser lakes are in chains and are contained in comparatively few watersheds.
2. In nearly every case these watersheds are traversed at some point or other by a railway.
3. For the most part these lesser lakes are situated in Ontario—the most thickly populated of our inland provinces.
4. There are always more persons desirous of fishing privileges than can be granted on the now over-crowded Great Lake fishing grounds.
5. It is an admitted fact and known to all fish-culturists that the fish producing capacity of small and shallower waters is always greater in proportion to their area than is the case with large waters.
6. The extraction of fish from small waters absorbs less capital and labour per ton of fish taken than is the case with large areas of water.
7. Small waters are easier controlled and easier stimulated to production than large waters for obvious reasons.
8. Quicker and more accurate results from artificial methods of stimulation are obtained in small waters. We like to say we are obtaining great beneficial results from our hatcheries on the Great Lakes, but documentary evidence hardly bears it out. The obstacles in the way of accurate accounting are so great, and further, we are only partners in these great sheets of

water, and therefore only know part of the story.

9. Finally, were these lesser lakes vigorously taken in hand, would it not be a means of attracting a population who would to some extent cultivate sufficient land to maintain themselves?

The problems admitted are many and various, and chief amongst them is the fact that our various fishery administrations would become more like our agricultural administration in that they would be stimulating production in new fields and carrying out a certain amount of experimental work in addition. A complete survey of our fisheries would doubtless be undertaken in order that we might have on file full particulars regarding the possible output of each watershed. We have already inaugurated soil surveys, mineral surveys and forest surveys, why not a fishery survey?

There are many points in addition to the foregoing which will doubtless occur to the reader, but it is only necessary to call attention to a few.

1. The grouping of lakes under watersheds, making each watershed a unit of control.
2. A careful biological survey would necessarily be made of each watershed in order to ascertain the species of indigenous fish, the necessary food for fish, the necessary plant life on which the latter subsists, the possible means of stimulating an increase of fish foods.
3. The consideration of the most suitable species of fish to the particular watershed, taking into consideration the beneficial, or otherwise, results of the introduction of exotic species.
4. The consideration of the question of the location of a watershed hatchery, with its associated field

"eyeing" stations.

5. The question of the division of the lakes in each watershed into equal groups so as to have them arranged in such a way that one group is being "planted," two groups contains growing fish, while the fourth group is being netted and the fish marketed.

One question of the introduction of exotic species is an interesting one, and one that deserves the most careful consideration. We have known many instances of unsatisfactory results due to want of thought, while, on the other hand, we know of some wonderful results where judicious planting of foreign species after careful experiment, has resulted. We need only refer to two or three instances.

The United States Fish Commission at a cost of \$4,000 introduced the Atlantic shad on to the Pacific coast some fifteen years ago and at the end of 1907, 1,500,000 lbs. of fish were taken by fishermen and sold for \$300,000. What the returns from the shad fisheries are today I fear I have no data by me to verify. Again, at a cost of \$1,000 the striped bass was introduced on the Pacific Coast, while in the same year 16,000,000 lbs. of fish were marketed for \$900,000.

I have myself successfully introduced the Rainbow and Steelhead trouts to the highlands of Ceylon, New Zealand, British East Africa and other countries.

Finally, may I venture to express the opinion that such a scheme of fishery development is worthy of careful consideration by any public or private body with a view of producing fish near our thickest populated districts on the minimum of expenditure and freight charges, while at the same time it would be stimulating industry where none at present exists.



250,000 lbs. of Fish Drying at Digby, N.S.

The British Fisheries

5th Article-- The Minor Fisheries

Having described the great fisheries, trawling and drifting, it will be convenient to deal with the other fisheries, which are, whether individually or collectively, of much less importance. They differ from the great fisheries in one respect. They are not concentrated at a few chief ports, but are scattered for the most part along the coasts and associated with numerous fishing villages; and with a few important exceptions they are carried on, not in the deep-sea regions, but more or less close to the shores, and it may be within the territorial waters. The minor fisheries comprise those making use of very different kinds of fishing apparatus and for very different objects.

The Hook and Line Fisheries.

The line fishing is the most important of the minor fisheries. It may appear to some that to call lining a minor fishery is rather to misuse the term, for in several countries it is the principal method by which demersal or bottom-living fishes are secured, and not so long ago that was true also in the British fisheries. The immense development of trawling since the latter half of last century has, however, put lining in the shade, so that now, in England especially, its share in furnishing supplies of demersal fish is very small indeed. That is sufficiently clear from the fact that of a total quantity of 8,361,000 cwts. of demersal fish landed in England and Wales in 1913, only 3.75 per cent was furnished by line vessels, viz., 3.53 per cent by steamers and 0.22 by sailers. It is not possible to state the number of boats and vessels engaged in the line fisheries, because most of them are also used for other methods of fishing. The official returns show that in 1913, 66 first class and 27 second class steam vessels, with 38 first class and 557 second class sailing vessels were employed in the line fishing in England and Wales, and many others were engaged in lining together with other methods. The statistics for the Scottish fisheries are more complete and they go further back, so that a picture may be given so to speak of the gradual replacement of lining by trawling. In 1913, of a total of 3,296,000 cwts. of demersal fish landed in Scotland, valued at £1,825,000, the contribution of the liners was 661,000 cwts., or 20 per cent, the value being £357,000 or 19.6 per cent. The contribution of the set-nets (large-meshed nets, loosely set, and anchored at the bottom in certain localities) was 93,000 cwts., or 3 per cent, valued at £44,000 or 2.4 per cent. The whole of the remainder or 77 per cent were landed by trawlers. Of the total of 661,000 cwts. landed by the liners, 305,000 cwts., valued at £178,000 were taken by steam liners; 45,000 cwts., valued at £29,000 by motor liners, and 311,000 cwts., valued at £150,000 by sailing liners. In Scotland up to the year 1899, the greater part of the demersal fish was landed by line boats, but since that year the greater part has been landed by trawlers, the share of the liners diminishing year by year as the following table shows:—

	Line-Caught Fish,		Trawl-Caught Fish	
	Cwts.	£	Cwts.	£
1890	1,577,000	591,000	292,000	204,000
1895	1,480,000	549,000	532,000	291,000

1900	757,000	371,000	1,077,000	703,000
1905	736,000	349,000	1,745,000	948,000
1910	867,000	388,000	2,102,000	1,103,000
1913	754,000	401,000	2,542,000	1,424,000

Under line-caught fish are included the small quantities taken by the set-nets. In association with the extension of trawling and the use of steam—latterly also of the internal combustion oil engine—the number of sailing boats and the number of fishermen have materially declined. Here are the figures for a series of years extracted from the reports of the Scottish Fishery Board, showing the number and tonnage of sail boats, the value of the boats and gear and the number of fishermen employed:

Year.	Number.	Tonnage	Value of Vessels & Gear.	Number of Fishermen.
1890	14,315	114,783	£1,439,000	46,800
1895	12,930	112,528	1,379,000	42,784
1900	10,973	108,384	1,581,000	37,609
1905	10,038	119,133	1,721,000	31,737
1910	8,128	89,979	1,210,000	25,785
1913	6,762	71,169	886,000	21,840

We have already seen in former articles that the total quantity and value of the fish landed in the British fisheries have gone on increasing from year to year, and in that aspect of the subject these figures ought not to cause disquiet — they merely represent a phase through which the fisheries are passing in all progressive civilized States. Nevertheless, the great decrease in the number of fishermen is to be deplored on other grounds, and what has happened in Scotland has also happened in England, particularly perhaps on the east coast, though no figures which bear upon the case are available. The decline in the line fisheries has had a certain compensation in another direction. The increasing competition of the trawlers drove larger and larger numbers of the younger and more enterprising fishermen from the line fishing to the herring fishery, and the remarkable development of the herring fishery in the last decade or so and not least on the East Anglian Coast has been not a little due to this cause. It may be noted that the decrease of 25,000 fishermen of the sailing boats in the twenty three years comprised in the above table is made up to some extent by the crews of the steamers and motor boats. These numbered 11,731, leaving a net decrease in the period of over 13,000 men.

Line fishing is carried on in two ways, by long-lines and hand-lines. The long-line is much the more important; it is also called spiliard, bulter or trot, according to locality, size, or the purpose for which it is used. In Scotland the "great-line" is distinguished from the "small-line," or "haddock-line," the former being used mainly on the deep-sea grounds and the latter generally near the shore. The long-line or great-line may be eight or more miles in length as used by the sail boats, with over 5,000 hooks; it is anchored at both ends and at intervals along its course. The bait varies; it may be whelks, herrings, squid, etc. The steam-liners, which may work lines of twenty miles in length, usually fish their own herring bait

with drift-nets. Long lines are chiefly used in the winter months, from November to April, and in the deep-sea, down to about 200 fathoms; they are used on the North Sea banks, at Iceland, the Faroes, Rockall, the Shetlands, the Atlantic slopes, etc. The fish taken are chiefly cod, ling, torsk, halibut, coalfish, conger eels, skates and rays, catfish, dogfish, etc. Sometimes the cod and halibut are kept alive in wells, a practice which used to be more in vogue than it is now. The smaller lines laid nearer shore are baited with various baits — mussels, limpets, shore crabs, worms, sand-eels, etc. The fish chiefly caught by them are haddocks, whiting, small cod, small coalfish, plaice, dabs, flounders, etc. Hand-line fishing is carried on all around the coast, and perhaps chiefly in the summer months, with various tackle and for many kinds of fish, principally cod, haddock, whiting, coalfish, pollock, flounders, dabs. Another method is "whit-fing" or "railing" in which the line is drawn through the water by a moving boat; mackerel are often thus taken in large quantities.

Seines, Stow-nets, Set-nets, Etc.

The seine net is less used in the British fisheries than in some other countries, and mainly for the pelagic fishes, pilchards, mackerel, sprats and herring. It is used in the Cornish pilchard fishing, and sometimes, if the fish come into the bays, it takes a large proportion of the catch. The ground seine or seringe-net is used at various parts of the coast for flatfish, bass, mullet, pollock, shad, sand-eels, etc., but the quantities taken bear little proportion to the catches of the other methods previously described. The American purse-seine, so largely used in the Scandinavian countries, appears not to be employed in the British fisheries. The stow-net is an enormous bag-net used for the capture of sprats and "whitebait" (essentially a mixture of young sprats and young herrings), from November to February at the mouth of the Thames, in the Solent, the Wash and elsewhere. It is a triangular bag, 50 or 60 yards long, with a large nearly square mouth about 25 feet wide, and tapering to a few feet at the end; the meshes range from about one inch to half an inch. It is used from an anchored boat (below it) in a tideway, the tide sweeping in sometimes enormous quantities of sprats and young herrings, as well as many varieties of fish. Set-nets are of various kinds and adapted to capture several species of fish, but their use in Great Britain is by no means so general as on the continent. They are corked above, weighed below and anchored at the bottom of the sea

near shore, being set up in a slack way so that the fish get entangled as much as gilled. Herrings, turbot, hake, skates and rays, and latterly cod and plaice in considerable quantities, are taken in these nets. The nets are sometimes called trammels, which term, however, should be reserved for the net with three parallel walls of netting, the two outer with large square meshes set exactly opposite one another, the one between with smaller meshes and hanging very loose, so that a fish pushing the loose net before it forms a pocket in which it is retained. It is chiefly used for the capture of red mullet, but other fish are also taken.

The "Shellfish" Fisheries.

These comprise fisheries for certain molluscs and crustacea. The molluscs include the oyster (*Ostraea edulis*), the mussel (*Mytilus edulis*), the cockle (*Cardium edule*), the whelk (*Buccinum undatum*), the periwinkle (*Littorina littorea*), the scallop (*Pecten maximus*), the queen or quean (*P. opercularis*), the limpet (*Patella vulgata*), and one or two others. The crustacea comprise the lobster (*Homarus vulgaris*), the crab (*Cancer pagurus*), the pink shrimp (*Pandalus montagui*) the brown shrimp (*Crangon vulgaris*), the prawn (*Leander serratus*), the Norway lobster (*Nephrops norvegicus*), the crayfish (*Palinurus vulgaris*) and one or two others. Most of these molluscs and crustacea are not, however, distinguished in the returns, but are included under "other shellfish," the English statistics specifying only crabs, lobsters and oysters, the Irish these and also mussels, and the Scottish mussels and quean ("clams") as well as crabs, lobsters and oysters.

For 1913, however, the English report gives particulars regarding some shellfish included under the heading "other shellfish." Among crustacea the quantity of shrimps was 73,252 cwt., valued at £67,060; Norway lobsters, 13,848 cwt., valued at £6,991; prawns, 411 cwt., valued at £4,695. Among molluscs were cockles, 241,496 cwt., valued at £25,234; mussels, 186,736 cwt., valued at £17,259; whelks, 52,418 cwt., valued at £10,761; periwinkles, 12,108 cwt., valued at £4,776; scallops and queans, 2139 cwt., valued at £1,270.

It is to be noted that the fisheries for shellfish have not kept pace with those for fish, although the total value over a period of 27 years (for which there are statistics) has not materially diminished. The figures are as follows (to the nearest 1,000) for, first, England and Wales and (2) Scotland:—

	Lobsters		Crabs.		Oysters.		Others.		Total value
(1)	No.	£	No.	£	No.	£	Cwts.	£	£
1886	452	19	2,863	39	45,554	135	289	76	269
1890	922	45	4,808	57	47,564	145	505	127	374
1895	677	30	4,501	55	25,276	78	590	146	309
1900	654	29	5,177	57	37,847	132	539	154	372
1905	503	24	5,106	59	36,427	102	423	117	302
1910	533	25	4,487	52	15,339	43	433	109	228
1913	634	31	5,568	62	27,973	91	584	143	327
(2)									
1886	750	31	2,385	14	296	1.3	334	28	73
1890	643	28	2,882	15	350	1.5	261	24	69
1895	610	26	2,548	13	238	1.1	266	27	66
1900	680	32	3,128	18	796	3.2	207	23	76
1905	760	36	1,990	12	218	0.9	164	22	71
1910	698	35	2,207	14	877	3.5	155	18	70
1913	681	37	2,214	14	1,316	4.8	127	17	72

The decline in line fishing caused a great falling off in the quantity of bait mussels landed, especially in Scotland. While the quantities and value of fish greatly increased, most shellfish remained stationary or decreased. The proportion which the value of the shellfish landed bore to the total value of all fish landed was the following, in percentages:

	1886	1890	1895	1900	1905	1910	1913
England and							
Wales	6.8	7.9	5.7	5.3	4.0	2.8	3.1
Scotland	4.1	4.1	3.6	3.2	2.6	2.2	1.8

This is a very different picture from that presented by the French or Dutch, American statistics, in which the increase of shellfish, essentially oysters, is remarkable.

Little need be said about the methods of fishing for these shellfish. Lobsters and crabs are taken more or less all around the coasts, especially where the bottom is rocky, in the well-known baited "pots" or "creels"; these are also used for whelks in some places and for prawns. The dredge is used for oysters and mussels, scallops and queans, while cockles are raked, as are also mussels in many localities. Norway lobsters are brought in almost entirely by steam-trawlers; they frequent moderately deep grounds. Shrimps are taken mostly by small-meshed trawls or by "shove-nets" or "push-nets"; in some places horse and cart shrimp trawling, known as "trolloping" is carried on. The shrimp fisheries are responsible for at least the capture of enormous numbers of the very young food-fishes, in particular flatfishes, as plaice, soles, etc. They are said to be mostly returned to the water alive, before the shrimps are boiled.

Before passing from the British fisheries to those of the Continent, a glance may be taken at the effect of the war on them, and the prospects ahead when the sword is at last sheathed. The quantity of sea-fish landed has naturally been very much reduced, but it is satisfactory to note that it is rapidly becoming

established, thanks to the activities of the departments concerned and the better organization. The price of fish has soared and total values, with a third of the quantity, are nearing pre-war figures. The totals, to the nearest 1,000, are given in the following table:

	Cwts.				
	1913.	1914.	1915.	1916.	1917.
England & Wales .	16,152	10,125	5,785	4,244	4,051
Scotland	7,828	7,440	2,319	3,412	3,072
Ireland	676	590	550	566	571
Totals	24,656	18,155	8,654	8,222	7,694

	£'s.				
England & Wales .	10,009	7,847	7,391	7,223	9,151
Scotland	3,925	3,144	2,051	3,148	3,645
Ireland	295	239	334	445	567
Totals	14,229	11,230	9,776	10,816	13,363

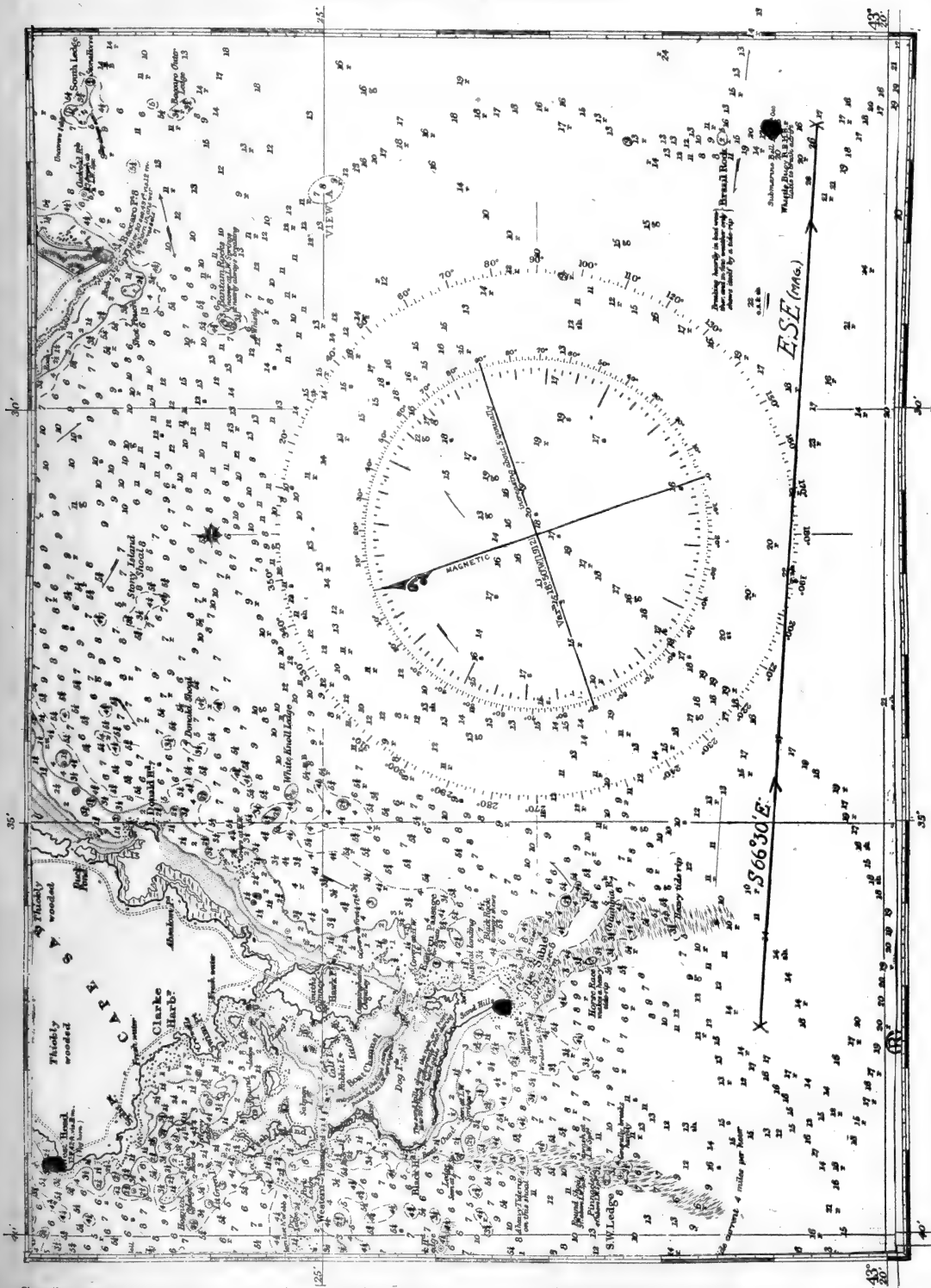
Fishermen and fishing boat-owners have never been so prosperous. Steam trawlers have landed catches, after a week or two's voyage, which have realized up to £7,000 and £8,000 and even £10,000.

The prospects after the war are favorable generally, for fish will be the animal food most readily procurable, and there will be a market for all the trawled fish landed. From the rest of the grounds it is believed fish will be more abundant, and there has been a large increase of the trawling fleet — the second line in the national bulwark and shield. Herrings are believed to be also abundant, but as the herring industry rests upon the great cured fish markets of Germany and Russia, the outlook is obscure. Much attention is now being given to the better distribution of fish, its refrigeration and cure, and there is every reason to think the public will be in a position and in a mood to consume larger quantities of fish than ever before. The next article will deal with the fisheries of Germany.



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NAVIGATION FOR FISHERMEN.



Section of Navigators' Chart showing Soundings, Aids to Navigation and Compass Rose.

Fisheries of the North Shore of the Gulf of St. Lawrence

By S. H. HOWARD.

The Steamship "Guide" of the Gulf of St. Lawrence North Shore Trading Company left Quebec at daylight on September 13th, bound for Natashkwan, a fishing station situated on the north shore, just clear of the lower end of Anticosti Island, calling on the trip down and up, at about 20 fishing villages. On the trip down it was loaded to the hatches, piled on decks, and on top of the cabin roof with miscellaneous freight, including supplies for the winter, salt, gasoline, lumber, flour, dry goods, hardware and empty cod barrels. On the trip up, collecting fish at various ports, her hold was filled up to the hatch covers with salt cod and dried cod, and some salmon, while every part of the decks was piled with barrels (two barrels deep), and in some places where there was no traffic, they were three and four deep. With accommodation for ten second-class passengers, she was carrying part of the time 29; some sleeping on deck, over the engine-room out in the open, and one or two of them on the table in the dining room. Others sat up all night. One cabin fitted up for the cabin boy, originally, with one berth and room only for one chair beside the berth, had a family of one man, one woman and two children to accommodate.

Last year, a larger steamer, the "Gaspesian," was on this route, and the "Percesian" was also on the Gulf trade on the south shore, besides other small steamers and schooners. The "Gaspesian" and the "Percesian" were purchased by the Government, or on the Government's behalf, and sent across the Atlantic before the winter supplies for the North Shore had been delivered from Quebec. There was therefore, a serious shortage of food on the North Shore last winter, the bulk of supplies remaining in Quebec for lack of transportation facilities.

The Steamship "Guide" is a small steel vessel, originally a pilot boat for the port of London, and the hold space is small and entirely inadequate to the requirements. The only other steamer on the route this year is the "Savoy," a boat not much larger than the "Guide," and concerned mostly with trade for Anticosti Island.

There is undoubtedly a vast development possible in the north shore fisheries. The "Guide" returned with a capacity cargo of 900 barrels and boxes, the latter containing dried fish, and the former salt fish, and at several places fish had to be left on the dock on shore, for lack of space on the boat; at Godbout, 10,000 pounds of fresh salmon had to be refused. This fish will therefore be lost to the market as fresh fish, and will be (probably) salted.

Fishing in the north shore is done with hook and line, generally two men to a boat, with two lines each, two hooks to a line. There is no net fishing done except at the estuaries of the rivers for salmon. The line fishing is done close to shore, or on banks not very far out. Even with this method of fishing, the cod are so plentiful, especially at some points during July, that astonishing catches are made. Dr. McDuff of Esquimaux Point, a creditable authority, told me of two men between dawn and 2 p.m. catching 3,030 cod fish. A fisherman told me that he and his mate caught

14 drafts (224 pounds) in 4 fours—3,136 pounds.

Plenty of Fish on North Shore.

Bishop Chaisson of the North Shore told me of two schooners carrying a crew of 10 men each, working in watches night and day, who caught and cleaned 75 barrels each in one day, and 50 barrels each the next day—a barrel containing 224 pounds. We, ourselves, passed numbers of small boats out fishing, not one-quarter mile from shore, and constantly pulling up fish while in our view. Practically, only the banks and reefs close to shore are fished. They say there are bigger banks several miles out, where trawlers could operate. Several large schooners from Gaspe, Halifax, Yarmouth, Lunenburg, and some American schooners were loading at various points on the North Shore, while further down schooners from Newfoundland come to the North Shore every season. The submarine scare on the Newfoundland banks has chased in fishing boats, and the north shore of the Gulf of St. Lawrence therefore becomes the more important at the present time.

The Gulf of St. Lawrence is right at the front door, yet for some reason fisheries there do not seem to have been exploited to the same extent as those off Nova Scotia. Transportation to Quebec and Montreal would be shorter, quicker and cheaper if organized.

Comparatively little fresh fish is shipped from the North Shore, and that salmon only. There is a small brine freezer plant owned by Mr. Comeau at Godbout, and he ships frozen salmon.

If something could be done to stimulate the fresh fish trade from the Gulf of St. Lawrence it would be a good thing. Salt cod and dried cod are not popular in this country. With 3 or 4 chilling plants on the north shore, at points like Seven Islands, Esquimaux Point and Natashkwan, a cold storage warehouse at some central location and a fish warehouse at Rimouski on the south shore, on the Intercolonial Railway, and with refrigerator boats of fair size and speed, running fish across the Gulf from the North Shore, fresh fish could be delivered in Quebec and Montreal in good shape—by rail from Rimouski.

The Gulf of St. Lawrence North Shore Company are seeking to buy a steamer of about the same tonnage as the "Guide" at the present time. They have also had plans drawn for two 1,000-ton steamers fitted with refrigerator holds, and have made application to the Government for subsidies amounting to \$85,000.00 for 10 years, and a grant of \$45,000, — being the usual subsidy of 30 per cent on capital cost—for refrigerators to be erected on shore. Their scheme embraces the entire Gulf of St. Lawrence, including Newfoundland, Cape Breton, Prince Edward Island, Magdalen Islands, Gaspe and the North Shore.

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In this campaign you will find the material on which to build an exceedingly profitable business. Be sure you are in a position to supply fish every day—especially Tuesdays and Fridays. Keep your fish right—display it right. This and the increased demand will mean bigger profits for you.

European Fishing Ports

How the British, Dutch and Germans Build Fishing Ports and Administer Them.

By COLIN MCKAY.

In European countries the development of fishing ports has been largely the result of prevision and design, coupled with organized effort in adjusting particular needs to common purposes. And there are not a few fishing ports whose progress in recent years has rivalled the upgrowth of boom towns in the Canadian West. Even Grimsby is a boom town; its progress as a fishing port is a romance of business enterprise. Although long known as a fishing port, its distinction as the greatest fishing centre in the world dates from a comparatively recent period. Its natural advantages, due to proximity to fine fishing grounds, are obvious, but it owes its rise to its present important position less to these than to the enterprise of the Great Central Railway. That company spent a large sum of money to construct docks for fishing vessels and provide facilities for the rapid and economical handling of fish. The equipment is modern, complete, compact—an orderly arrangement of discharging berths with railways sidings, near-by, markets, curing and cold storage plants, ice houses, coal pockets, dry docks. The Company's venture has been a financial success, notwithstanding low dock charges and low railway freight rates. To meet the growing needs of the industry the company commenced the construction of another dock in the early part of 1914. Before the war Grimsby had a fleet of over 600 trawlers, most of them superior vessels of their type. In 1912 its total catch aggregated nearly 400,000,000 pounds, valued at over \$10,000,000. On good days 300 cars were required to transport the catch to the markets of London and other cities.

Inspired by the success of the enterprise of the Great Central. The Lancashire and Yorkshire Railway started a few years to construct a modern fishing port at Fleetwood on the West Coast. The company spent about \$600,000, and the docks were completed in 1911. In 1912 Fleetwood, which a few years before was a fishing village of little importance, landed a catch of 90,000,000 lbs. valued at about \$2,500,000.

If we turn to the continent we find a striking example of the development of a fishing port according to plan in the brief history of Ymuiden in Holland. In 1897 Ymuiden consisted of a half dozen or so fishing shacks, lost among the sand dunes near the entrance to the Amsterdam Canal. In 1898-99 the Government of Holland dredged out a harbor there, constructed quays, and provided facilities for handling a large catch of fish. Almost immediately the fishing industry began to develop at an amazing rate. By 1912 Ymuiden had a fleet of 160 steam trawlers, 9 steam drifters, and 14 sailing vessels employed in the herring fishing. In 1902 the value of the fish catch landed there was 4,220,000 francs; by 1912 it had risen to 14,700,000 francs.

Geestmunde, the principal fishing port of Germany, was literally built in No Man's Land. Where it stands the Weser River flowed a matter of 25 years ago. To form the port a broad breakwater was built into the Weser River paralleled with the left bank. Nearly all the installations are erected on reclaimed land, behind this breakwater. The dock is about 5,000 feet long, with a mean breadth of 250 feet, broadening towards the entrance to 360 feet to facilitate the arrival and departure of fishing craft.

In 1902 this port fitted out 121 steam and 280 sailing craft, and handled a catch valued at 5,125,325 marks. In 1912 it fitted out 234 steam and 398 sailing craft, and handled a catch valued at 11,275,565 marks.

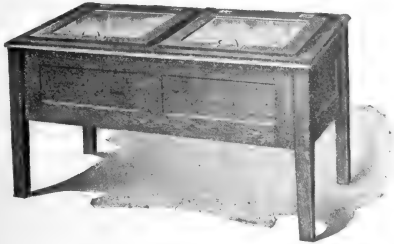
The construction of this port with its great array of fishing plants extending along the made-land behind the breakwater for a distance of nearly three-quarters of a mile, involved an expenditure of \$3,000,000. The state of Prussia supplied the money. The state, however, only exercises a nominal control over the port. The real administration is in the hands of an incorporated society composed of sixty men, nearly all of whom are prominently interested in the fisheries. This society nominates all the officials, the state, as a matter of course, ratifying such nominations.

Connected with the port is a wireless telegraph station which permits of communication with the trawlers at sea, most of which are equipped with wireless apparatus. As illustrating the German method it may be mentioned that the government some years ago voted 250,000 marks to encourage the equipment of fishing vessels with wireless. The administration of the port maintains a school for those who wish to learn wireless telegraphy. The company also runs a large hotel, furnished with all modern conveniences, for the accommodation of fishermen using the port.

In carrying on the fish business at Geestmunde, individual enterprise is subordinated to mass action in a characteristic German manner, but the results spell economy of effort and time. Conducting directly various important operations, and exercising supervision over many matters of detail, the company represents the mass action of the port, and has been able to induce the railway management to provide better transportation facilities than private firms acting as units would have been likely to obtain; a consideration of first importance, as the success of the fresh fish industry of any port whose markets are inland is absolutely dependent upon the character of the railway factor from the time the trawler heaves in sight, glad to leave behind her the grey wastes of the North Sea. Its harbor master hoists a flag at the entrance which tells the trawler the number of her berth. When service available. The company becomes the control-

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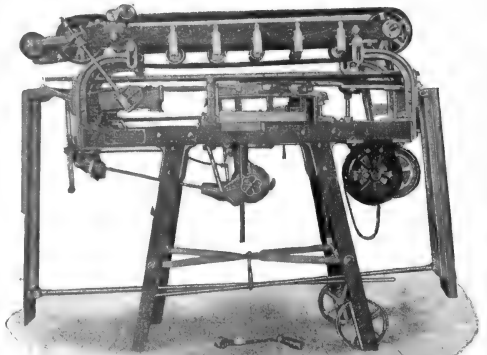
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the vessel is moored her fare is discharged with the aid of electrical cranes, and she is shifted across the dock to fill her bunkers. Employees of the company wash the fish, sort them, and pack them in wooden boxes, built to hold 110 pounds. If the packer does not strike the exact standard, he attaches a label showing the correct weight.

A company official inspects the fish, and if they are not considered sufficiently fresh they must be sold at once to a reduction's works where they are converted into pig's feed, oil for industrial purposes or fertilizers.

From the quay side the packages of good fish are taken to one of the auction halls, and arranged in circles around the hall. After a few minutes to give prospective buyers an opportunity to look over the offerings, the sale by auction commences. A stand containing the auctioneer and his staff careers around the hall like a merry-go-round, and the sale proceeds with surprising despatch. The packages are then removed to the establishments of the dealers near-by, and the fish are re-sorted and graded according to the requirements of the dealer's customers. Then the com-

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 O "Remember, Thursday, October 31st—Can- O
 O ada's National Fish Day!" O
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pany's employees transport the re-graded packages to the railway station situated on the neck of the breakwater, and load them on awaiting trains. Everything is arranged to facilitate quick dispatch, and the company's officials have definite instructions not to allow any formality or technicality to cause any delay. The railway management make it a point to move the trains as rapidly as possible; special cars are provided and they are kept clean and wholesome. In hot weather cars with double walls are used.

The great fresh fishing ports of England and Europe have two conditions in common—the concentration of the various establishments and accessories of the industry in a limited area adjoining a basin specially reserved for the use of fishing vessels, and a working agreement with the railway serving the port which practically amounts to a business alliance. At Grimsby and Fleetwood, the great ports on the east and west coasts of England respectively, the docks and adjoining installations are the property of railway companies, while in the fishing ports of Holland and Germany the railway managers co-operate with the fish merchants, and spare no pains to provide a system of transport designed at all points to serve the best interests of the port. In effect railway policy does for the fishing industry what the C.P.R. has done for agriculture, mining and other industries in the west, or what the Grand Trunk Pacific is attempting to do for the fishing industry at the new port of Prince Rupert.

This organization of the fish business on industrial lines has produced certain monopolistic tendencies. The larger ports with their modern equipment and unrivalled railway facilities have absorbed the business of the smaller ports in the vicinity, or at any rate de-

prived them of their former importance. Big companies employing large fleets of steam craft, have become the predominant factor in production, and the big companies, too, owing to their access to economical facilities for handling and transport, practically do all the business with the great central markets. In England, it is said that before the war steam vessels landed upwards of 90 per cent of the total catch. The number of independent fishermen using small sailing boats in the shore fisheries is comparatively small, and their activities are confined to the prosecution of special fisheries or the supplying of limited local markets.

The imperialistic tendency of the industrialized fishing ports may have been affected in recent years by the introduction of the gasoline motor boat, but not to any great extent. The big fish swallows the little fish—that is a process of evolution not peculiar to the fishing industry. Whether from the national point of view this process of port aggrandizement, accompanied by the increase of power of the large company and the decline of the independence of the individual, is desirable is perhaps a debatable question. In any case it appears to be inevitable, and is not regarded with much concern by the public. Since 1900 the British Government has been so much impressed with the importance of modernizing fishing ports, that it has made large annual grants to assist the improvement of such ports, and naturally the larger ports have not been slow to press their claims to the lion's share of such grants. The results expressed in terms of business progress have been notable. In the twenty-three years before the war, owing principally to the industrialization of the larger ports, the quantity of fish transported by British railways increased 90 per cent, while in the same period the exports of fish and fish products to foreign countries increased 80 per cent. All this has meant, of course, a general extension of

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 O Do your bit to put the National Fish Day on O
 O the Calendar. O
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various sorts of business, a decided impetus to vessel building and allied industries, and a great increase of opportunities of employments—to say nothing of an important augmentation of the food supply of the people.

Incidentally the modernized port and large scale industry lend themselves to the effective utilization of uneatable positions of fish, which in many Canadian ports are wasted. In many European ports the by-products of fish are a by no means despicable source of revenue. Norway, for instance, exported in 1913 nearly \$3,000,000 worth of fertilizers derived from fish. In addition, Norway in the same year exported 15,000,000 lbs. of fish flour, a commodity which is used advantageously to feed cattle and hogs, especially hogs.

Major Hugh A. Greene, Director of Fish Supplies, Canadian Forces, is still in England.

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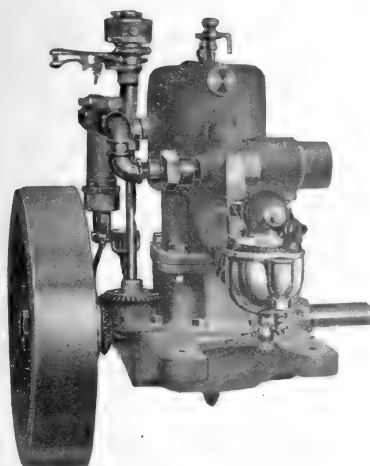
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How to Handle Frozen Fish

(Reprint of Bulletin No. 4 of the Series published by the Honorary Advisory Council for Scientific and Industrial Research. Prepared by E. E. Prince, Sc. D., LL.D., Dominion Commissioner of Fisheries, Chairman of the Biological Board of Canada.)

Frozen fish are certain to be one of the great food commodities of the future. There has long existed a prejudice in the mind of the public against frozen fish, but this prejudice has no just basis, and fish as well as other cold storage commodities are becoming recognized as practically as good for the table as are fresh fish. In countries like England frozen fish were almost unknown until very recently. Since the war began there has been a vast change, and in the great fish markets of Britain frozen fish are now figuring, and will figure on an enormous scale in future years, while in Canada, the United States and other countries, the demand for frozen fish, which has been very great in the past, will be enormously increased.

How can frozen fish be supplied to the public in the best possible condition? There is no doubt that frozen fish have often been badly handled by fishermen and fish merchants, by express and freight employees, and even by retail dealers who have done many things which injured the frozen fish and spoiled the product. In the home the cook has usually not known how to handle frozen fish, and frequently spoiled it before it reached the table. All this can be put right, and everything which spoils frozen fish must be avoided in the future, for it has been proved that refrigeration preserves all the best qualities present in fresh fish, and affords many advantages in preservation and in shipping which are not possessed by fresh fish. Frozen fish are superior to salted or cured or smoked fish, excellent as these are for food. Two eminent scientists recently stated that they could not tell which were fresh and which were frozen fish, when both were cooked and placed on the table at the same time as a test. In taste and texture of the flesh they were declared hardly distinguishable from each other.

What are the essential conditions which the fisherman should observe and which the shipper and the retailer should bear in mind when handling frozen fish?

(1) Handle fish as carefully as possible. If bruised, gashed or trampled on, their best selling and food qualities are destroyed.

(2) Avoid piling the fish in such masses that they crush each other out of shape. Appearance and flavor are lost by heavy pressure.

(3) Fish should be cleaned, washed to remove the blood, and packed in cracked or crushed ice, so as to keep them in the best condition. Gutted fish packed immediately in crushed ice keep better than ungutted fish.

(4) On bringing the fish ashore, they should be placed in cold conditions, crushed ice being used; or transferred in quantities to large central freezers, where rail shipments can be made up. Fish change and lose quality immediately after death, and they are best if placed at once in cold conditions. In 36 to 48 hours, unless placed in cold storage, decomposition is apparent especially in the region of the intestines.

(5) The cold conditions should be kept uniform, for if the temperature rises or the fish are allowed to thaw, they spoil more quickly than if never frozen at all. Heat and rise in temperature are much to be feared.

Three very important points must never be forgotten by the fishermen and by others handling frozen fish. First: freezing does not make a fresh fish out of a bad fish. Fish must be fresh and in the best condition on being subjected to refrigeration, and all their food qualities must be preserved without any serious change. Second: fish should not be thawed out and refrozen, as deterioration and loss of quality results. Once frozen they must be kept at the same low temperature until used for food. Third: Rapidity of decay after removal from ice is in proportion to the number of hours elapsing before icing the freshly-caught fish.

The methods of freezing fish may be classified as, first, the dry method, that is freezing in the cold air or in a refrigerator, and second, the wet method, which is freezing in brine at a very low temperature.

Fish when frozen by the first method are best if the blood and mucus are removed, usually gutted, and placed in crushed ice, and carried from the boat to the quick freezer, and placed in trays or on racks close to the refrigeration pipes at a temperature much below freezing.* In twelve to fourteen hours the fish are usually frozen solid.

The fish may be removed and kept in cold storage for many months at a temperature of 7 deg. to 10 deg. F., that is 25 deg. to 22 deg. below freezing.


"Too often," as an eminent United States expert on fish refrigeration reported "freezing fish has meant saving those which were already deteriorating." Freezing cannot improve fish, but summer-caught are usually better frozen, unless marketed immediately in a chilled condition, and, if frozen, then deterioration due to heat is prevented.

The second method, namely, freezing in brine, is very effective. A brine freezer may be of small capacity and carried on the fishing-boat, as has been done in Norway, or a freezer of large capacity at some central point convenient for receiving the catches.

The small brine freezer consists of a wooden tub capable of holding about forty cod of average size. In the centre is fixed a cylindrical vessel of iron, open at the top and covered with wire netting at the bottom, and in the centre a screw propeller is placed near the bottom of the tub and provided with a handle at the upper end of a perpendicular axle. The tub is filled two-thirds with a strong brine solution, and crushed ice is placed in the iron cylinder and in the tub. The axle is made to revolve and the brine drawn down into the ice-filled cylinder, and the water circulating become intensely cold in a short time (15 minutes). It is necessary to put more ice into the cylinder as it melts, to keep the temperature down. The fish are suspended in the space around the cylinder, when the temperature reaches 25 deg. F., and should not be

*The "sharp freezer" is often 5 to 18 deg. below zero F.

Toilers of the Sea!

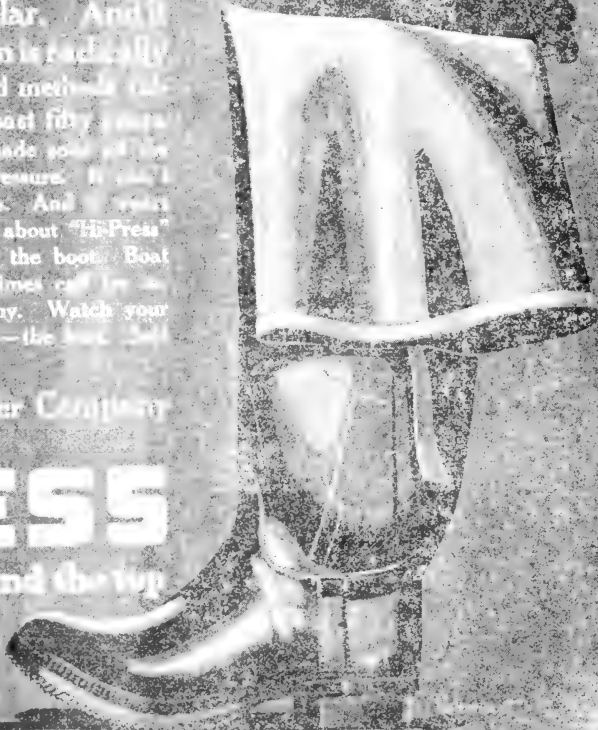


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placed too closely so that they do not freeze massed together.† To keep the temperature even, salt and ice must be placed in the inner vessel, as the temperature rises, and the propeller must be worked continuously, if many fish are in the tub. If the tub is only partially filled with fish, it can be stopped for a while. A similar form of small brine-freezer can be used where ammonia-freezing gear is available, and a coil of pipes carried into the tub to reduce the temperature instead of the cruder iron cylinder with crushed ice and salt just described.

Brine freezers of large capacity can be established in the form of iron-lined tanks with a coil of pipes connected with an expansion ammonia refrigeration machine.

It has been found that whereas marketable fish, such as salmon, cod, etc., are thoroughly frozen by the usual cold-air refrigeration in thirty-six hours to forty-eight hours, such fish are frozen perfectly by the brine method in about one and one-half hours, and halibut and large cod in about three hours. The time occupied for proper freezing varies with the size and shape of fish, the kind of fish, the thickness of fish, etc. About a ton of fish per day can be frozen in a brine refrigeration tank, costing about \$100, and the cost of salt and ice would not be more than \$2 or \$3.

Tests which have been made with the brine method have proved that:—

- (1) Freezing is accomplished with great rapidity,

one-fifteenth or one-twentieth the time occupied by older methods.

- (2) The best edible qualities are retained.
- (3) There is practically no shrinkage, thus retaining the attractive appearance of fresh fish.
- (4) The natural colour of the fish remains.
- (5) The fish is frozen solid as if penetrated by glare ice.
- (6) The flesh (muscles) and organs are not disturbed and the curd and sapid matters are retained.
- (7) If the fish are wrapped in non-conducting paper (preferably parchment paper) there is no deterioration for seven or eight days, when removed from cold storage; but for shipping purposes, powdered cork is an effective packing between the wrapped fish.

With proper care and an observance of the conditions mentioned above, frozen fish will reach the consumer in the best possible condition. If the markets can be supplied with frozen fish in an attractive condition, the demand will not only immediately increase and the prejudice against frozen fish be removed, but there is no doubt that it will tend to largely do away with the demand for unfrozen fresh fish in localities distant from the fishing grounds, which demand it is often difficult to supply.

†Galvanized wire baskets are convenient and effective for holding the fish.

Hints on Frozen Fish

(Reprint of Bulletin No. 3 of the Series published by the Honorary Advisory Council for Scientific and Industrial Research. Prepared by E. E. Prince, Sc. D., LL.D., Dominion Commissioner of Fisheries, Chairman of the Biological Board of Canada.)

I. Cold Preserves Food Products.—That cold prevents putrefaction and prevents fresh fish and other perishable products from decay, is recognized by everybody. The careful housewife always keeps her milk, butter, poultry, etc., in a cool place, or in a kitchen refrigerator. Efficient cold-storage permits articles of food to be kept for long periods, and within certain limits, there is no essential change or deterioration.

II. Nature's Wonderful Refrigeration.—The most extraordinary instance of preservation by cold storage is that discovered in eastern Siberia, 15 or 16 years ago, by Dr. O. F. Herz of Petrograd, namely, a huge frozen mammoth elephant. This monstrous hairy elephant, or mammoth, has been extinct for many thousands of years, but a specimen was found at the bottom of a hill on the Berosofka river, and had evidently been killed by falling over a cliff. It became imbedded in ice, where it had remained for over 2,000 years. Dr. Herz and his staff excavated the monster out of its bed of ice. They found it in a lying posture, with its feet bent beneath it, and its neck broken. There was grass, in its mouth and stomach, undigested, and the flesh had been preserved in such a fresh state that a portion of the animal's trunk and a small piece of the back, exposed during summer thaws, had

been eaten by wolves. The skin covered with thick brown hair, and the huge body, were excellently preserved. It was a case of refrigeration on a wonderful scale by "Mother Nature." Similar cases of fresh portions of mammoth preserved in ice sheets were discovered in the Klondike region of Canada by gold-miners. If Nature preserves such huge animals in a fresh condition for twenty centuries, (it is surely not difficult for modern ingenuity to devise schemes for perfect preservation in cold storage.

III. Advantages in Freezing Fish.—Food preservation has now become so perfected that the world's markets in the future will depend more and more on meats, fruits, etc., kept in cold storage. The cold storage of fish has accomplished four advantages:—

- (1) It secures in months of scarcity a good supply of fish, captured and frozen in the months of excessive abundance. Cold storage of fish prevents a "glut" in the market, which always involves loss of valuable food for the people.
- (2) It enables large shipments to be made to inland cities and populous areas located away from the waters where the fish are captured in plenty, and cheaply. The east can enjoy western fish, and the west can enjoy eastern fish, while the great interior lakes can supply both, and thus there can be interchange of fish products all over the country.
- (3) It ensures fish of good quality, having all the excellencies of the fresh product for the table. Fish deteriorate, lose flavour, appearance and weight, the longer they are kept after capture, but if frozen, they

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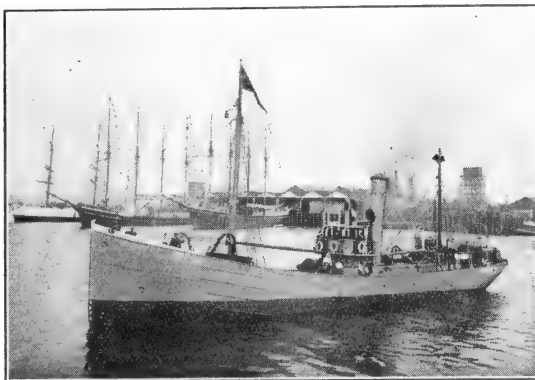
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will retain their good qualities for many months under proper conditions.

(4) It enables the wholesale and retail fish merchants to supply the public at lower average prices than would be otherwise possible; the chief supplies of fish being frozen in times of abundance and cheapness.

IV. Conditions for Successful Freezing.—If efficient freezing methods are adopted, neither flavor nor appearance are lost, and the best frozen fish result, if the three following conditions are observed:—

(1) The fish must be frozen in fresh, prime condition, as soon as possible after capture. If decay has begun, freezing will not make them fresh fish.

(2) The fish must not be exposed to the sun or to heat, or be knocked about and bruised. They should be handled as little as possible, and with care.

(3) Fish once frozen must not be allowed to thaw, or subjected to a rise in temperature, as that spoils and changes their quality.

V. Speed and Care necessary Before Freezing.—Fish freezers are best located as near the fishing grounds as possible, and the fish should be frozen within three or four hours after capture, otherwise the fishermen should use broken ice plentifully, cover them over from the sun's heat by canvas sails, and keep them as cold as possible, and unexposed, until they reach the freezers.

VI. Four Stages in Fish Freezing.—(1) All blood, dirt and slime on the outside of the fish should be washed off, and they should be gutted, if large fish; but smaller fish may be frozen in "the round." Indeed, some markets desire fish not gutted and in "the round."

(2) The fish after washing are placed on metal sheets, or thin boards, or on trays, and brought into direct contact with the refrigeration pipes in the "Sharp Freezer." Air circulates in this chamber at a temperature of 5 deg. or 18 deg. below zero F. (—20 deg. to —27 deg. C.), the pipes forming a successive series of shelves one above the other. After 12 to 30 hours, the fish can be removed. A little cold water poured on the outside will detach them.

(3) They are now taken to the glazing room, where there is a temperature of 20 deg. to 25 deg. F. (—6.6 deg. to —3.8 deg. C.) and the single fish, or blocks of fish, are submerged in clean cold water just about 32 deg. F., so that they become enclosed in a coat of ice like glistening varnish. This glaze preserves the aroma and flavor of the fish, which are otherwise lost, probably owing to oxidation of the fatty elements in the fish. Glazing is repeated usually three or four times until the coat of ice is thick enough to prevent any deterioration.

(4) The glazed fish are placed on the floor, or in boxes with paper lining, or on the shelves of the cold storage rooms, where the temperature ranges from 0 deg. to 10 deg. F. (—17.7 deg. to —12.2 deg. C.). some prefer a lower temperature, say 5 deg. below zero F. Boxed fish, with paper lining, keep 3, 4 and 5 months without loss of quality. Large fish require to be wrapped in a separate sheet of paper, vegetable parchment being the best. The temperature should be tested by holding the thermometer near the ceiling of the cold storage chamber, as warm air rises. All doors must be kept closed as much as possible, so that warm air is not admitted from the outside.

VII. Re-glazing.—As ice evaporates even at freez-

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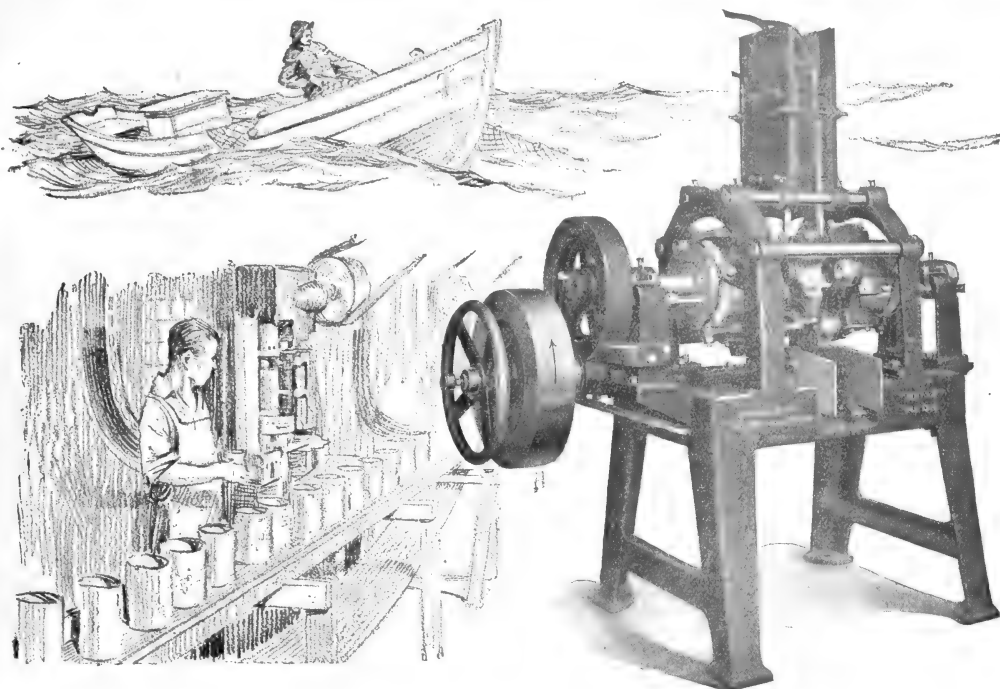
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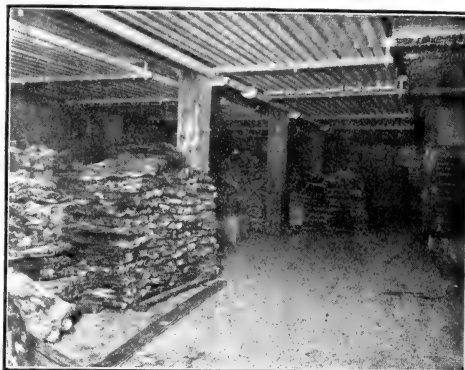
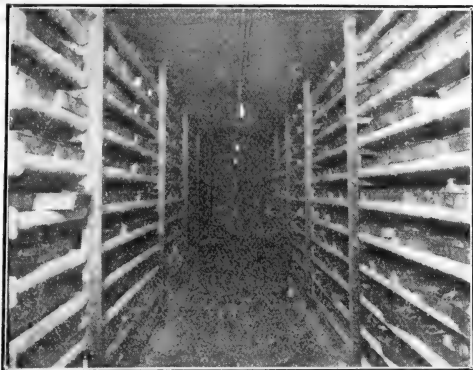
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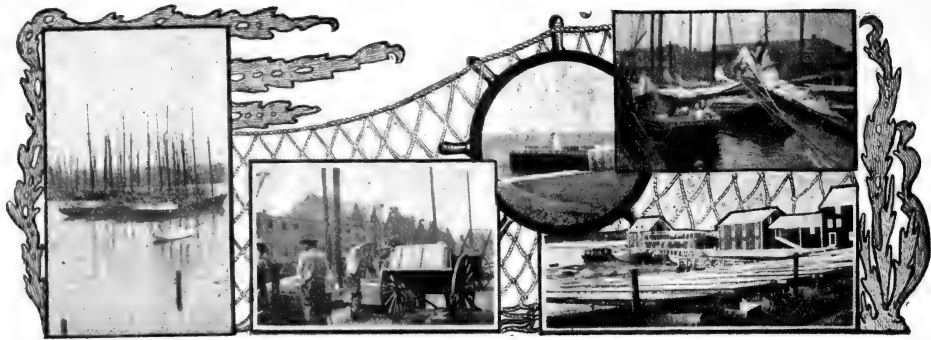
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Prince Edward Island Notes

Fishing on Prince Edward Island is confined at time of writing to cod and oysters mainly. Rough weather has interfered to a considerable extent with the catch, especially in the latter part of September and the first of October. Of late some fair catches of cod have been made off Tignish Rustico and East Point. The fishermen are being paid from \$3 to \$4 from the Knife, an exceptionally high price for this territory.

About the third week in September herring fishing was in full swing all round the coast, an unusual condition for that time of year. Some fishermen landed ten to twelve barrels a day, averaging them \$10 per barrel. Oyster fishing began on the private beds September 1st, and on the public beds a month later. Some fair catches are being made in East and West Rivers, but few are being taken in the western part of the island. The once famous Malpeque Bay is now practically fished out, and the attempt to restore its former yield by artificial cultivation has met with little success, owing in a large measure to a disease, which is supposed to have been imported there with imported American oysters used to restock the beds. This year, however, the disease is not in evidence, and the owners of a considerable area of cultivated ground reports that there has been a gratifying increase in his young stock, so that there is still hope for the industry to be built up again. The cleaning of the beds and other preparations made by companies which were organized just before the war, may yet be attended with beneficial results in bringing to life again areas which were in a dying condition. With the introduction of more capital and enterprise, it may not be too late to save the situation. On the public beds the fishermen are being paid about \$8 per barrel for their oysters.

On the 5th of October, Andrew Halkett, Nationalist of the Dominion Fisheries Department, Ottawa, concluded his observations on the lobsters' conducted under authority during the close season. He visited four points on the island, viz., Rustico, Kildare, Waterford and Canal Cove,

There were one hundred trap liftings at each front, and the lobsters, after being thoroughly examined scientifically were liberated. The sea aid weather conditions increased the difficulties of observation.

Mr. Halkett took the percentage of the males and females as he did during his previous observations in the open season, also the percentage of the seed lobsters among the females. The latter he found to be exceedingly low. The weights were also taken for both males and females, the totals varying according to localities.

There was also quite a variation with respect to numbers and sizes. Mr. Halkett found that where the lobsters were fewer in number, the average weight was higher.

The time elapsing between the dates of observation, August 31st to October 5th, accounted in a measure for the difference in numbers and size, as the movements of the lobsters are affected, he said, by the lowering of the temperature.

On being asked: How did the catch in the close season compare with that in the open season, he replied: That is a difficult question to answer, as the catch varies exceedingly at different points, and at different periods of the year.

"Dried observations of the lobsters themselves," he said, "show that at this time of year the quality of the lobsters could not be better. Sufficient time has elapsed for the hatching, moulting, the hardening of the new shell, and the filling of the later to ensure an excellent marketable lobster.

During his tour throughout the island he found that the educational campaign, which was conducted by the Biological Board, under the auspices of the Department, had aroused both packers and fishermen to the urgent need of conserving a very valuable industry.

Mr. Halkett left the island on the 14th inst. for Guysborough Country, N.S., to resume his scientific investigation and make a survey of areas suitable for lobster sanctuaries.

ECONOMY AND CONSERVATION

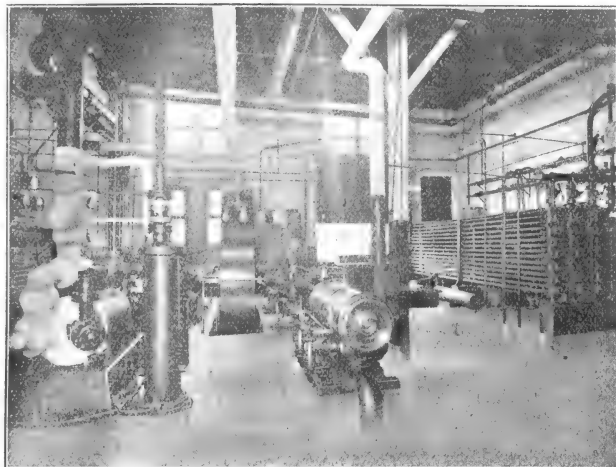
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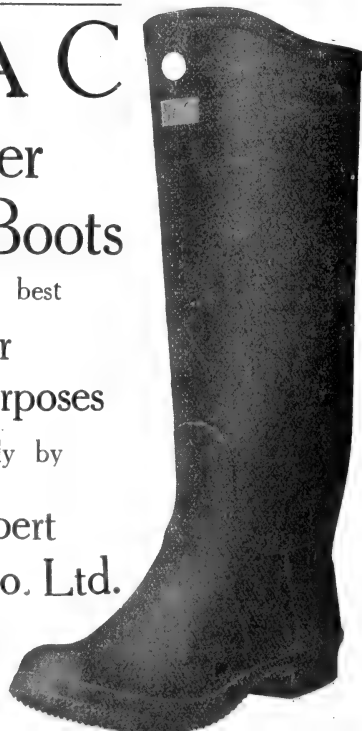
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Billingsgate Market

Billingsgate, September 7th, 1918.

Although it is two weeks since the last report was despatched conditions have been much the same throughout the fortnight. A few days after the last review of the markets in the United Kingdom was despatched supplies began to show signs of falling away, and have continued to do so. This has chiefly been brought about by boisterous weather, although the changing of the areas which may be worked by fishing vessels, owing to Admiralty instructions as the result of naval dispositions, of course, is attributable to a break in the regular working of the vessels from time to time. With the boisterous weather the temperature on land has fallen appreciably, and has been much under the normal for the time of year. In fact, compared with an average September it has been really cold this week. This has tended to quicken the demand for fish, and with the lighter landings, competition has increased, with the inevitable result that prices have firmed up generally. Especially has this been the case with "chat" haddocks, which have steadily appreciated until to-day they are commanding almost as much as sizeable haddocks.

The herring fishing off the Scottish coasts has been more or less a blank, and with the usual herring fishing from Grimsby not permitted this year, and very little success attending the boats operating from one or two of the smaller Yorkshire stations, there has been an acute shortage in herrings, and consequently in kippers.

There is practically no change to report in the position so far as Canadian frozen fish is concerned, but well known brands of frozen salmon, are urgently required.

Billingsgate, September 14th, 1918.

Throughout the past week the markets generally have been scantily supplied, and with the landings quite insufficient to requirements, maximum prices have been the rule rather than the exception. As an indication of the competition to secure supplies it may be noted that smallest sized haddocks, "chats," as they are termed in this country, have commanded almost as much as sizeable haddocks, the schedule rate for which is 12s. per stone wholesale. At this time of year in pre-war days it was not at all uncommon for trunks of "steamer" chats, weighing from five stones to five and a half stones, to change hands round 4s. per trunk.

With the general shortage, rationing has been resorted to at several of the fishing ports, and it is quite likely that this plan will be adopted generally for allocating the landings this winter, as distribution officers have been appointed at the different ports.

The lack of fish from home waters has given a fillip to the sale of Canadian frozen fish, and this gives emphasis to what was stated in a previous report i.e., that there is little likelihood of imported frozen fish meeting any great demand in the United Kingdom

taking the year as a whole, but it should serve as an excellent stand-by during lean weeks. The point for Canadians to consider, of course, is whether the trade would warrant the expenses incurred on this basis, especially when it is borne in mind that prices for fish must come down appreciably once the supplies increase by the release of the boats now engaged on national service, and the reopening of grounds now closed by Admiralty orders.

Billingsgate, September 21st, 1918.

This week's operations in the fish trade throughout the United Kingdom can be summed up in a very few words, supplies being scanty and buyers very eager at the full maximum rates. Not only have the catches generally been extremely light, but with whittings, sizeable and small, predominating at two or three ports, the shortage in other varieties has been even more pronounced. Herrings have been almost unobtainable, but an improvement in this respect is expected with the opening next week of the autumn herring voyage at the East Anglian ports of Great Yarmouth and Lowestoft. Although a fairly large number of herring drifters are assembled at these two important centres, the fleet in no way approaches in numbers that of pre-war days, when the vessels working from Great Yarmouth alone often exceeded four figures.

The extreme difficulty experienced by fishmongers in securing anything like an average quantity of fish has given great zest to the inquiry for the Ministry of Food Canadian frozen fish, and it is pleasing to learn from Mr. S. J. Williams, of the firm of Peter Forge, Distributing Agent to the Ministry at Billingsgate Market, that very few complaints have been received as to indifferent quality. As it is believed that the Canadian fish now being handled consists in the main of the most recently landed consignment, it is to be hoped that this improvement in the general condition may be taken as a criterion of what may be expected in the future. Provided Canadian exporters pack only the choicest quality there need be no fear as to its sale on this side during times of scarcity as long as war conditions prevail.

Billingsgate, September 26th, 1918.

The Canadian frozen fish marketed by the Ministry of Food has proved a boon to many retailers this week, especially fish friers, but trade in this direction is considerably restricted by the lack of confidence felt by dealers, owing to the varying quality of the fish, the unreliable weights and the uneven grading. However, where this fish is in prime condition it meets a ready sale, and with the close of the summer season, during which prices were reduced owing to the comparative cheapness of fish from Iceland and at times, from the home grounds, rates have been increased slightly. For the guidance of exporters and packers, it may be stated that small-sized skate wings are most popular, so far as this particular variety is concerned, buyers looking askance at the large thick "wings."

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
OF FISH PRODUCTS

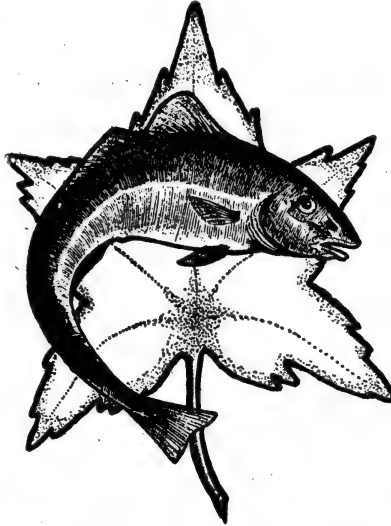
F. WILLIAM WALLACE
EDITOR

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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, NOVEMBER, 1918

No. 11

Develop Our Fisheries

No Time Should be Lost in Getting our Share of Export Trade. Opportunity Knocks Now, and Must be Taken. Future of Fishing Industry Depends on our Aggressiveness.

In the reconstruction work which must necessarily follow the conclusion of hostilities, our natural resources, and the manufactures therefrom, must be developed to the maximum if we are to pay our debts and assume that place in the world's commerce to which our bountiful inheritances of timber, minerals, agricultural lands and fisheries entitle us.

Canada's fisheries constitute one of our greatest natural resources which must now be developed along economic and progressive lines. Fishery development in the past has been sporadic—certain branches being heavily prosecuted, while others, and often the most important in quantity and quality, have been neglected.

The work of the Canada Food Board since September, 1917, has done wonders in stimulating the home market, and it may be safely said that conditions in this respect are satisfactory. The home consumption is still capable of considerable increase, but home consumption of our fish and fish products cannot, for many years to come, offer a market large enough to induce extraordinary development of our fishery resources.

Our export trade in fish and fish products is capable of greater expansion, and should be looked into

immediately. At present we export approximately two-thirds of our fish—the bulk of this being made up of salmon, lobsters, herring, cod, haddock, hake and pollock, mackerel and halibut.

Salmon from British Columbia in a canned state and salt dried cod, haddock, hake and pollock from the Maritime Provinces constitute our heaviest fish exports in point of value. Salmon finds its greatest market in Great Britain, the United States, France, Australia and the Pacific countries. The dried salt cod, haddock, hake and pollock is marketed largely in the United States, West Indies, Brazil, South American countries, Italy, Portugal and Spain. Our Atlantic herring finds a market in the United States and the West Indies—the Pacific variety is exported to Australia, Japan and China. Mackerel is readily absorbed by the United States. Lobsters, fresh and canned, are exported to the United States in large quantities—France being our best market overseas for the canned article. For fresh fish of various kinds, the United States has always provided a ready market.

During the war, a good market for Canadian frozen fish was obtained in Great Britain, but it is doubtful if this can be maintained when the British fishing fleets resume operations. If the necessary refrigera-



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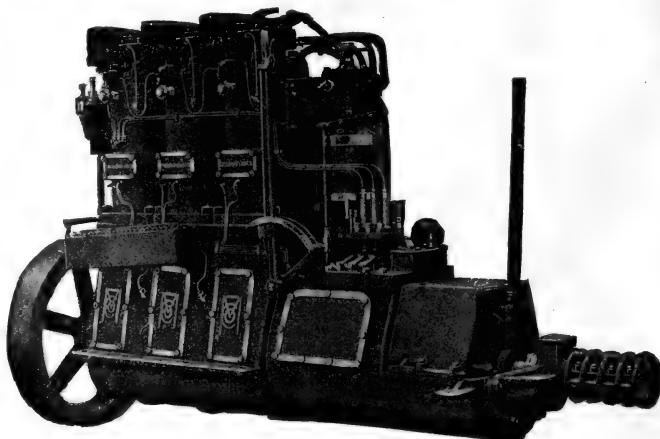
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tion space on steamships could be secured, our Canadian frozen fish of the cheaper varieties might be sent overseas to feed the European nations now facing starvation. Given a reasonable time to prepare, Canadian producers could enormously increase production, and millions of pounds of frozen fish could be exported to Belgium, France, Germany, Russia and Austria. The vital problem in this is not so much the producing of the fish, but the provision of the transport which must be supplied frequently in order to carry off the fish as produced owing to the limited cold storage facilities of our fishing companies.

Should the transportation of frozen fish to Europe be unsurmountable owing to lack of refrigerated steamers, fish in a pickled and dried state could be exported in enormous quantities. The production of cod, haddock, hake, pollock and herring in Canada is limited only by the means of catching them, and if a ready market for them was available, steam trawlers and drifters could soon be in operation increasing the production this winter. This is a matter which should be looked into at once as the necessary salt must be imported; vessels and gear prepared, fishermen enlisted and shore establishments enlarged.

While the bulk of the fish in this scheme must necessarily be procured on the Atlantic as the readiest point of production, yet some of the quantity might be taken from Pacific waters—herring and the lower grades of salmon principally.

Fish in a canned state could be exported overseas to fill the immediate requirements of a food denuded Europe. Canneries abound around our coasts which might be utilized to pack herring, certain grades of cheap salmon, haddock, codfish, etc., and in canned fish, a few plentiful varieties of lake fish would be available for export.

The foregoing refers to the utilization of our food fish resources for immediate requirements in augmenting the shortage of meats, but one of the problems which calls for immediate attention apart from the aftermath of war, is the building up of a strong and permanent export trade in our fish products.

Canada, with her unexcelled fishery resources, should control the West Indian and South American market in canned, dried and pickled fish. The Scandinavian fishermen have long exported the same products to these markets and will again just as soon as normal conditions return. Our herring fisheries are capable of vastly increased development, but lax methods of packing and antiquated methods of fishing have given our Scandinavian and British competitors a hold on markets which should be ours by virtue of proximity. If we packed and cured our herring properly, not a barrel of European herring should be marketed in the United States or the West Indies.

On the Pacific Coast, the Japanese, Chinese and Australasian markets for numerous fish products could be ours if aggressively developed and promoted. We have the fish, but we haven't got the proper appliances for catching them economically, or any standards of quality in curing and packing. The haphazard methods of preparing our fish products have engendered a feeling of unreliability among foreign importers.

It is curious to note in all the talk of reconstruction and industrial development, which is in the air at present, not a word has been said regarding the development of our fisheries. Mining, timber and agriculture have been prominently featured, but the fisheries

have been ignored, and yet in this particular resource we can honestly claim to have the most prolific in the world.

The opportunity is now presenting itself for Canada's fisheries to get into the fight for world trade; to establish our fish products in permanent and remunerative markets; to build up a powerful fishing fleet with a huge personnel of seafaring men capable of being the nucleus of a Naval Reserve and a nursery for the seamen required in the new Dominion Mercantile Marine; to provide remunerative occupations for thousands of persons and to bring into the country the money necessary to maintain our credit, develop our resources and pay our debts.

During 1917, Canada's fisheries were valued at \$52,000,000, and gave employment to 100,000 persons. Considering the length of time they have been prosecuted, these figures should be doubled. The opportunities are open to us, but if no move is made to build up our export markets now, progress will be painfully slow and then only in the face of frenzied competition.

THE SHEATHING OF THE SWORD.

The war is over. The night of horror has passed and the new dawn brings peace and illuminates with joy and thankfulness a world which now realizes that Justice and Liberty will eventually triumph in the struggle of Right against Wrong. The nations who unsheathed the sword for Democracy endured many dark days, but faith in the righteousness of their cause imbued them with the will to conquer. After four years of sanguinary and dreadful fighting when the flower of the world's manhood was blotted out in the slaughter, the barbarian hordes of Teutonic Kultur were hurled back, beaten, ruined, abjectly assenting to paralyzing terms, and with losses frightful to contemplate.

The Arch Hun, William Hohenzollern, is a fugitive in a neutral land with the shadow of retribution over his head and nothing left him but painful recollections of sacrilegious boastings and the failure of forty years' of Machiavellian scheming. He gambled his mighty Empire for world domination by the sword, and, while he might have gained it by walking the paths of peace, yet he travelled the road of blood and lost—hurled his country into irretrievable ruin. Those who marched in his train are now pouring back into the lands which spewed them forth—there to face anarchy, poverty and starvation. Truly, a stunning refutation of the insidious doctrines of Nietzsche, Trietsche, and Bismarck and the ruthless warfare exemplified by Genserik, Alaric and Atilla. Germany will live forever in the memories of all men as the most despicable nation and people the world was ever cursed with.

Canada has nobly done her part in the fight for freedom and justice. She has given of her blood and treasure without stint—tributes which earn her a place among the nations who have won liberty through sacrifice. But, in all the rejoicings; in all the plans for the future, let us not forget the men who risked all and died in order "that liberty may not pass forever from the earth." We cannot do anything for the heroes who have "gone West"—they have now gained their reward, but, as the dead would have us do, let us remember the men who went through it and came back. For you and I, these men willingly offered their lives. Let us remember that fact in charity and in business and endeavor to pay the debt.

A CANADIAN NAVAL RESERVE.

At the present time, it would be good policy for Hon. C. C. Ballantyne, Minister of Marine & Fisheries and Naval Service to look into the matter of forming a Naval Reserve from the ranks of our Canadian fishermen. This journal has strenuously advocated the establishment of a Naval Reserve for the last five years, and the present time would seem opportune.

Canada is in a better position now to organize and train a Naval Reserve force than ever before. We have trained efficient officers in the R.N.C.V.R. capable of becoming instructors and also the necessary fleet of training ships. When demobilization of our present Naval forces occurs, the Reserve scheme might be inaugurated to keep ships and officers employed.

In training fishermen in naval work, we have precedents in Great Britain and Newfoundland and the worth of the fishermen-reservists of these countries in the past conflict cannot be too highly praised. The war has shown the value of the small patrol and mine-sweeping vessel and fishermen make the ideal personnel for these craft. Canada has a considerable fleet of trawlers and drifters which would make good training craft, and many of them might be retained for that purpose.

There is no guarantee that war may not break out between nations in the future, and if we take lessons from the one just concluded, preparedness is the paramount factor. Canada must build up her fishing fleet and merchant marine, and we will have better seamen and better fishermen if we can give them something of a naval training.

WANTED—RETAIL FISH SALESMEN.

Canada suffers from a dearth of good retail fish salesmen. In this country, the really first class retail fish salesman is at a premium, and the trade suffers accordingly. The best salesmen we have here comes from the Old Country, where the fish salesman is a recognized trade and serves an apprenticeship to his particular work.

The fish salesman of Canada is usually a butcher. He may be a good butcher, but he is not usually a good fish salesman, though he may do his best. Handling fish and handling meat are two entirely different things, and the men in both lines must know the game thoroughly to make a success of the business. In Great Britain, the retail fish store is a distinct business, and is seldom, if ever, associated with the butcher. The butcher's business is to sell meat. He handles fish only on compulsion for Friday's trade. He doesn't care much for the fish part of the game, and prefers to handle only those fish which don't give much trouble—which explains for the popularity of halibut and salmon.

Canada needs more retail fish stores in the larger towns. In the smaller centres, the butcher should have a distinct fish department with a proper fish salesman in charge. Your number one fish salesman must know fish of all varieties; must know when and how they are caught and how to handle them when he gets them. He should be able to skin and fillet any kind of fish for customer's particular needs, and also be able to talk the hesitating customer into purchasing. Men of this type soon build up a business when integrity and reliability is combined with the requisites of salesmanship.

The Canadian Fisheries Association are looking into this important question, and an effort will be made by them to find positions for reliable fish salesmen from Great Britain who wish to come to Canada. It is thought that many British soldiers formerly in the retail fish trade might be placed with Canadian firms.

FISH WASTE FOR CATTLE FEED AND FERTILIZERS.

There exists now, and for a long time to come, a shortage of fodder for cattle and fertilizer for the farms. The foods and fertilizers which can be manufactured from fish offal would find a ready and remunerative market at the present time, but our people are slow to catch on to opportunities which are ever presenting themselves. This magazine has been consistently urging the utilization of fish waste not only in editorials, but by publishing the articles of a well known authority on the subject—Mr. J. B. Feilding.

Quotations from American companies, manufacturing processing machinery, show that a complete plant capable of handling 20,000 lbs. of fish offal per day of 24 hours can be bought for something like \$20,000 f.o.b. U. S. manufacturing point. Steam engine for power would be extra. This plant manufactures oil, cattle feed and fertilizer.

When the good market which exists for these products, Canadian fish producers would do well to look into the matter of establishing a plant for the utilization of the fish offal common to all fishing ports.

THE STEAM TRAWLER—GREATEST FOOD PRODUCER.

In a speech made recently in the British Parliament Mr. Prothero stated:—

"The production of food per unit of manpower in fishing is very high. In agriculture, it is estimated at 8 tons per unit; in fishing it is estimated at 16 tons per unit, and if you take it on trawlers alone it would be something like 35 tons per unit."

These figures should give Canadians food for thought. Our sea fishery resources are enormous; and the steam trawler is the only worth-while method of producing demersal sea fish. But to develop our fisheries, it is necessary that we build up export markets as the home trade will never be large enough to absorb all we can catch.

The salt fish trade could largely augment their supplies by the use of steam trawlers, and as an adjunct to this business, the canning of the smaller fish caught should prove remunerative. Both these lines are readily exportable, and the foreign market can be largely developed.

With the shortage of meats which exists at present, the market for dried, pickled and canned fish should be a good one.

At the next session of Parliament it is expected that the Pickled Fish Inspection Act of 1914 will be made compulsory. It should have been made compulsory when it was drafted.

FISH DISPLAY IN RETAIL STORES.

The neat and tasteful display of fish in retail stores cannot be too strongly emphasized. Sloppiness of display tends to disgust the prospective purchaser and chases business away. Cheese, apples, vegetables and other food commodities may be shown with more or less carelessness, but fish must be attractive to stimulate purchase. A well dressed fish window will often arrest the passer-by and induce him or her to step into the store and buy some of the fish so temptingly arrayed.

It means a little work, but it is always worth it, and when once commenced, it should be kept up. John Jones and Tom Smith were butchers and fish dealers in a fair sized town. Jones had a big business and handled a lot of fish, but paid little or no attention to fish display. Occasionally, he would dress up a window with fish, but as a rule he would only have a corner of his window decorated with a box of haddies or kippers lying negligently among some vegetables, and a barrel of salt herring or cod exposed at the store door.

Smith did not have the trade of Jones at first, but he made it a point of reserving one window for meat and another for fish and vegetables. After closing time, he dressed his fish and vegetable window attractively and changed it at least twice a week, and often featured certain lines. For a time it seemed like wasted effort, as his competitor sold double the amount of fish, but gradually the passers-by took notice of Smith's consistently attractive fish display, and when the attention of the public began to turn to-

wards fish by reason of the Food Board's campaigns, Smith's business increased. He spread himself still more and put in sanitary display cases and stocked many varieties. Before many months had passed, he corralled practically all the fish business in the town and incidentally a goodly share of the meat trade also.

On another page, we illustrate an attractive window display of fish by an up-to-date concern. The wholesale distributors might very well preach this gospel to their customers through their price lists and bulletins. It helps to stimulate effort and build business.

PACIFIC STEAM TRAWLING SUCCESSFUL.

Figures received by the Canada Food Board indicate that the market for Pacific flat-fish has grown wonderfully. Since the fishery was established under the auspices of the Food Board in March 1918, over three and a half million pounds of flatfish were taken by British Columbia trawlers and the bulk of this amount has already been marketed in Canada. Stocks in storage are small and are moving out rapidly.

Over a million pounds of codfish was also produced but it is noted that this fish does not sell as easily as does the soles, brills, plaice, witches and skate.

The success of the flatfish trade has been built up within nine months, as prior to that the fish were regarded as unmarketable by fishermen and there was no regular demand for them. The steady propaganda work of the Food Board has succeeded in establishing a new Pacific fishery which will prove a future god-send to the industry.



MAKE FISH DISPLAYS ATTRACTIVE.

The above window space in one of the Matthews-Blackwell stores in Ottawa follows out the Canada Food Board's sug-

gestion that fish displays be made as attractive as possible. The window cards are printed by the firm for use of its own stores.

CANADIAN FISHERIES ASSOCIATION IN VICTORY PARADE.

One of the greatest pageant parades ever held in Canada was carried off in Montreal on Monday, November 11th. The parade was primarily for the Victory Loan but when the news of the German surrender came in, the procession was turned into a grand march of victory and was viewed by an immense and wildly enthusiastic crowd.

President Brittain of the Canadian Fisheries Association determined that the fishing industry would have to be represented. Capt. Fred Wallace of the Food Board, had a fishing dory in which two men of the crew of a Gloucester schooner had made their way to land after their vessel was destroyed by the former Halifax trawler "Triumph," and this was secured and appropriately mounted on a float. Shields, giving the history of the dory, were mounted on each side of it, and large signs reading "Canadian Fisheries Association" in French and English covered the sides of the float. Other legends relating to the fisheries were also displayed in addition to flags and decorations.

Messrs. Wallace and Brittain, rigged out in oilskins and sou'westers, officered the dory while two British blue-jackets who had been in the Jutland fight, constituted the crew. When the parade got under way, the dory sail was set to a fair wind and with a band ahead, the C.F.A. exhibit made the five-mile journey in two hours and was the recipient of much applause.

The roller was shipped in the dory's bow and a proper cod trawl was rigged to run through the imitation waves and under the boat. Every now and again Captain Brittain took a pull on his line to see "if they were biting" and the onlookers cheered his optimism.

At the conclusion of the pageant, the dory was headed for the Windsor Hotel and the blue-jacket crew were invited to lunch and latterly safely stowed in a taxi and sent down to their ship.

GERMAN FISHERIES IN THE BALTIC.

The "Fish Trades Gazette," of London, says: "Hitherto the fisheries in the Baltic have been, in comparison with those in the North Sea, of little importance, and have been carried on by small craft, founded at Stettin, and now two others have been found unprofitable. As a consequence of the demand for fish brought about by the war a certain stimulus has been given to the development of the Baltic fisheries, and quite a number of companies have been formed for their exploitation. Last year one was founded at Stettin, and now other two have been created, one at Lubeck, with capital of 4,000,000 marks, and the other at Rostock, with a capital of 2,000,000 marks. Other companies are to be formed at Danzig and Kiel. All these companies will make use of steam vessels, especially trawlers, but, for the reason above stated, it is not intended to fish much in the Baltic proper, but rather in the Cattegat and Skagerrack, where fish are said to be plentiful. When the war has come to an end the vessels will be utilized also in more distant waters, as the North Sea, Iceland and the White Sea. It is pointed out that the home ports lie near the great consuming centres, as Berlin, Stettin, Dresden and Leipzig, and the saving in rail-

way freights will compensate for the greater expense of steaming to and from the fishing grounds, compared with the North Sea ports, as Hamburg, Altona, Geestemunde, and Cuxhaven. Another point made is that on the Baltic coast there are numerous centres of the fish-preserving industry, which will receive direct supplies, instead of getting more of them from the western ports."

In the future Canadian fishing vessels marketing their trips at Portland will be subject to the same customs restrictions as imposed at Boston. Fishermen from the provinces discovered some time ago that the enforcement of the customs regulations at the Maine port was not as rigid as at Boston and consequently they cut Boston for Portland.

The matter was brought to the attention of Boston fishing interests with the result that a protest was made to the Treasury Department, and hereafter the Canadian fishermen will be accorded the same treatment at all United States ports. The Division of Customs upheld the procedure of the Boston Customs officials with respect to Canadian fishing vessels arriving at Boston.

USE CANADIAN SHELLFISH.

It would be very desirable if the Canadian soldiers overseas could learn to appreciate the common marine mussel, which in Europe is not less esteemed than the oyster. There are vast beds of this shellfish along the Canadian coasts, unutilized. The Canadian soldier may even come to know and enjoy the periwinkle.

They have periwinkles in abundance, but it never occurs to them to eat them. Yet in France the consumption of these small univalve mollusks is enormous. All over Europe, indeed, they are sold at the shops of grocers and fishmongers. Usually they are boiled in salted water and served with butter at breakfast.

Along the coast of Brittany periwinkles are grown for market in shallow water, in beds floored with boards and fenced with wire net. The beds are filled and emptied by the tides, which bring abundant food. When eighteen months old the mollusks are big enough to be harvested, a fair yield being ten tons to the acre.

INVESTIGATION OF THE PROBLEMS OF SALT-ING FISH.

Significant results in the preliminary chemical investigations on salting of fish have already been attained. It has been found that the impurities in salt, even in small quantities, have a marked effect on the process of salting and on the quality of the salted product.

Sodium chloride (common salt) penetrates the fish very rapidly and completely. A small amount of calcium chloride added to the pure brine retards the penetration; magnesium chloride retards it even more, and sodium sulphate retards most of all. The chlorides of calcium and magnesium and sulphate of sodium are common, almost constant, impurities in salt, and it can readily be seen how they may adversely affect the proper preservation of fish in hot weather by prolonging the time of penetration of the fish by brine.

These impurities also have a marked influence on the quality of the fish. Pure salt produces a soft article, with a brownish or grayish meat; small amounts of the impurities give a much firmer fish, magnesium

chloride being most active, and in addition keeping the skin bright; small amounts of calcium chloride render the fish hard, larger amounts make the skin loose and slimy. Calcium chloride produces white meat and magnesium chloride is particularly effective in this regard.

It may be thus seen that once the effects of these impurities are known, it may be possible not only to bring about a more rapid and complete brining of fish, but to produce at will a salt fish possessing almost any desired degree of hardness and whiteness. —U. S. Fisheries Bulletin.

The window illustrated below won the first prize for display of fresh fish, offered by the Vancouver branch, Canadian Fisheries' Association, on National Fish Day. The enterprising owner of the Economy Market, which is at 71 Hastings St. W., is Chris. Johnson, the gentleman on the left of the picture. It was difficult to get a photograph showing the design and varieties very clearly, due to an unremovable glass front. The centre piece consists of three steelhead salmon driven by a celluloid doll, with reins of red, white and blue, sitting upon a halibut. The legend "Victory Fish Drive" was outlined with salmon on the background of cod fillets. Mr. Johnson had over thirty varieties of fresh and cured fish in this window.

INTERNATIONAL FISH-CULTURAL CONFERENCE.

On October 4 a conference was held at Buffalo, N.Y., between the superintendents of the U. S. Fisheries Bureau's Cape Vincent and Put in Bay stations and Canadian hatchery officials, the object being to agree upon a plan for close co-operation between the two Governments in the propagation of the important commercial fishes of Lakes Ontario and Erie.

With reference to Lake Ontario it was agreed that the Bureau of Fisheries should be permitted to collect whitefish eggs on the grounds it has heretofore covered in Canadian territory, and have the privilege of extending the work into new fields near the entrance to the Bay of Quinte, if found desirable. The Canadian authorities will render all practical assistance, will urge upon their fishermen the necessity of securing eggs, and will deny licenses to any person refusing to allow the Bureau's spawn takers to operate in their boats. Judging from the entirely amicable relations that have existed between the fishermen and the Bureau's men in the Lake Ontario fields heretofore covered, it is believed there will be no necessity for any drastic regulations in this respect.

It has been arranged for the superintendent of the Cape Vincent station, in company with the superintendent of the Dominion hatchery at Belleville, Ontario, to call on the fishermen operating near Belleville prior to the opening of the spawning season.

It was suggested by the Canadian officials that if either the Cape Vincent or the Put in Bay station secured more eggs than it could handle to advantage,



ECONOMY MARKET, 71 HASTINGS ST. W., VANCOUVER, B.C.

Can. Fisheries' Association. Fresh and Cured Fish Display.

after first filling the Government and other stations dependent upon them, the excess should be turned over to Dominion hatcheries operating in the same region, in preference to shipping the eggs to distant points. The Bureau has instructed its superintendents to dispose of surplus eggs under the conditions stated without first securing the permission of the Washington office, it being understood that it is often necessary to move large numbers of green eggs in the field without delay. It has also been ordered that any eggs supplied by the Canadian authorities under this agreement must not be shipped to applicant, but the product thereof must be planted on the local spawning grounds or as near them as possible.

The Bureau wishes to effect a general distribution of the important commercial fishes of boundary waters, and it has been found advisable to supply eggs each year to certain hatcheries operated by the States. The pursuance of this policy will not interfere with the international plans as outlined. The Bureau will continue to make extensive plants of whitefish in Dominion waters, such as those in the vicinity of North Bass and East Sister Islands, in Lake Erie.

As a result of this conference it is expected that the superintendents in the field will be able to handle eggs during exceptionally favorable seasons with greater facility than has heretofore been possible.

FISH CULTURE SUCCESSFUL IN CANADIAN LAKES.

A Naval Service Department memorandum issued recently states that evidence of the most satisfactory results from the fish cultural operations of the Department is apparent on all sides. The catch of whitefish per net in Lake Winnipeg was never better than during the current season. The whitefish fishery in Lake Erie, the greatest whitefish producing area in Canada, was more prosperous this season than it has ever been, and Lake Ontario is rapidly returning to the prosperous condition in which it formerly was. The salmon streams of Ontario and Quebec were never in better condition. The spawning areas are covered with salmon which are forcing their way into the highest tributaries of the various streams.

The fish cultural operations of the Department are confined almost entirely to the propagation of commercial foodfishes such as Atlantic salmon in the Maritime provinces, whitefish, lake herring, salmon trout and pickerel in Ontario and the Prairie provinces and Pacific salmon in British Columbia.

VALUABLE BY-PRODUCTS FROM FISH.

In describing the activities of the chemistry committee of the Advisory Council for Scientific and Industrial Research, Dr. Ruttan said:

"As you know, one of the great problems in Canada is obtaining fertilizer, and we are looking in every direction to obtain material which will induce more intensive farming and give a larger yield from the farms. Of all the sources of fertilizer, one which seemed to us as of outstanding importance is refuse from the fisheries, popularly known as fish waste and waste fish. At a conservative estimate there is upwards of 300,000 tons of fish waste for use in Canada. It is not only possible to obtain a valuable fertilizer with a high nitrogen and phosphate content, but quite possible and economical to produce protein food for cattle and hogs, as well as for poultry from fish

waste. A certain amount of data has been sent in by Dr. McIntosh, on the Pacific coast, and Dr. Mackie has reported regarding New Brunswick, Nova Scotia, and especially Cape Breton, and as a result from the information obtained from the Department of Marine and Fisheries, we have sent Mr. J. B. Feilding to make a preliminary port survey of Nova Scotia and Cape Breton as well as Gaspé, with a view of finding out how much fish waste is available and whether it is within hauling distance of centres where it could be readily converted. The West coast is different. There fishing is periodical. It is continuous in parts of Nova Scotia, Cape particularly, all year round. It seems to be much more feasible to establish a plant in the East than in the west. Considering that the present price of protein is \$2 per unit, and ammonia is at \$6.40 and oil is very high at the present time, \$1.00 to \$1.10 per gallon, it seems that the undertaking should prove a profitable one we hope to get started during the coming season."

PISCATORIAL PARAGRAPHS.

The Emergency Fleet Corporation of the U. S. are going to build a fleet of fifty steam trawlers for the U. S. Food Administration. Though the plan was mooted some months ago, it is not expected to be cancelled, as increased production is required.

The Western Provinces will make a strong demand for control of their natural resources at the meeting of the provincial Premiers in Ottawa, Nov. 19th. The fisheries of the lakes of Manitoba, Saskatchewan and Alberta will probably come under the demand. Whether it will be to the advantage of the fisheries to have provincial administration remains to be seen. If it can be carried out by efficient officers and kept free from politics, the plan may be all right, and the fisheries developed. But if the fishing waters are going to be exploited as presents for political workers, God help them.

An unusually late run of mackerel struck in along the Cape Shore of Nova Scotia, and considerable quantities were taken early in November. Sardine herring also made a late appearance in the Bay of Fundy during the last week of October and early in November. The prospects which hitherto looked black for canners and weimen, are now reversed. Truly, the fisherman's life is a gamble.

All herring packers in Newfoundland packing herring by the Norwegian method are to be licensed. A Herring Fisheries Board has been formed and licenses will be issued under their auspices. All herring packed in this method must be inspected by authorized inspectors, who will grant certificates if satisfactory. No export will be allowed if certificate is not produced at Customs when applying for export entries. License number must be branded on the head of the barrel by the packer. Newfoundland is certainly alive to the value of the herring trade. They have beaten us to it with compulsory inspection.

A recent judgment of the District Court of Massachusetts rules that fishermen on American steam trawlers must be aboard and ready to sail when the captain calls. Eight men of the steam trawler "Walrus" held the ship up forty-eight hours by refusing

to sail in her. The delay cost the owners \$1,250, which the defaulting fishermen will have to pay out of the wages due them.

Canadian fishing vessels are now operating on the Banks. Due to the depredations of Hun submarines, our trawlers had to remain in port or fish in the North Bay. During September the catch of fish fell off considerably.

President A. H. Brittain of the Canadian Fisheries' Association has been taking an active interest in reconstruction problems, and has been representing the interests of the Association before the Canadian Manufacturers' Association, and the Federal Government. Through his efforts, we understand, that the fishing industry will be represented on any committee formed to look into domestic and foreign trade opportunities.

MARGARINE FROM WHALE OIL.

Dr. Sopp, a Norwegian professor, has succeeded in producing an improved and better tasting margarine from whale oil. There will be three different grades of this margarine, of which to the best quality there is added 10 per cent butter fat, the so-called "Government margarine," intended for sick persons. To the second quality is added a little milk and the third quality is made without the adding of any of these ingredients. In these times with the great shortage of butter and fats for food purposes, the further development of Dr. Sopp's method is awaited with interest, especially as Dr. Sopp's whale margarine is said to have a better taste than the whale margarine previously introduced.

ITEMS OF INTEREST FROM U.S. BULLETINS.

Fish wastes for feeding animals.—J. M. Bartlett, Maine Agr. Exp. Sta., Bull 266, 291-2 (1917).—The waste from sardine factories contain 2.5—8.2 per cent nitrogen, normal, 15.8—51.2 per cent protein, and 8—21 per cent fat. The H₂O content varied from 10 to 70 per cent as discard from the factory. The air-dry material contains approximately 10 per cent H₂O. The analysis shows a high food value, but the oil content is too high to feed to animals in large amounts.

The commercial freezing and storing of fish. Ernest D. Clark and Lloyd H. Almy, U.S. Depart. Agr., Bull. 635, 10 pp. (1918).—The bulletin gives a description of the best methods of freezing and storing fish. Fish kept in the frozen condition for 27 months showed no changes which rendered them unsuitable for food.

Fish meal as feed for swine. F. G. Ashbrook, U.S. Dept. Agr., Bull. 610, 9 pp. (1917).—Fish meal proved superior to tankage in the feeding of pigs. No fish flavor was observed in the pork, when fed in the proper proportion. The fish meal used contained 57.3 per cent protein and 15.3 per cent fat, the tankage contained 60 per cent protein and 8 per cent fat.

The utilization of certain seaweed as fodder for horses. Adrian. Compt. rend 166, 54-6 (1918).—Analysis of seaweed common along the coast of France, after proper treatment to remove the excess of salt shows 14.4 per cent water, 53 per cent carbohydrates, 17.3 per cent nitrogenous matter, 11.5 per cent cellulose and 3.9 per cent mineral salts. Compared with oats this is lower in carbohydrates, but considerably

higher in N. Feed tests made with horses afflicted with lymphangitis resulted in the cure of those that received the sea-weed with an increase of weight while the control animals remained sick. A group of 20 cavalry horses were also fed sea-weed in place of the regular oat ration and at the end of 2 months were in better shape and had gained more weight than the control group of 20 that received the oats.

The commercial freezing and storage of fish. Ernest D. Clark and Lloyd H. Almy. U.S. Dept. Agr., Bull. 635, 10 pp.

Experiments on the digestibility of fish. A. D. Holmes, U.S. Dept. Agr., Bull 649, 14 pp. (1918).—Using the methods employed in previous studies (C. A. 11, 2097; 12, 727) digestion experiments were made on Boston mackerel (A), butterfish (B), grayfish (C), and salmon (D). The basal diet consisted of boiled potatoes, crackers, apple sauce, and small amounts of sugar, tea or coffee, and a little lemon juice. The average digestibility of the fish protein was (A) 93.1 per cent, (B) 91.8 per cent, (C) 92.8 per cent, (D) 93.2 per cent; and the average digestibility of the fish fat was (A) 95.2 per cent, (B) 86.4 per cent, (C) 94.3 per cent, and (D) 93.7 per cent.—(Chem. Abs.)

Celluloid-like material from fish scales. S. Sakane, U.S., 1,264,979, May 7. Fish scales are treated with alkali, e.g., a 2-3 per cent solution of Na₂CO₃, to remove fatty matters and deodorize them and then with HCl or other acid to dissolve Ca salts, leaving only organic substances and rendering the lines of growth conspicuous. The material is then steeped with a condensing and softening agent, such as CH₃O, Al₂(SO₄)₃ or tannic acid and glycerol. The product thus formed is suitable for use as a substitute for mica, mother-of-pearl, celluloid or glass.—(Chem. Abs.)

Cod-liver oil. Anon. Bull. Imp. Inst. 15, 582 (1917).—New regulations in Newfoundland require all refined cod-liver oil to be inspected before exportation, and branded, (1) as non-freezing cod-liver oil for human consumption, and (2) refined cod-liver oil for human consumption. Only new oak barrels, tin lined barrels or butter oil casks may be used as containers for the refined oil.—(Chem. Abs.)

Dog-fish liver oil. A. Chaston Chapman, Analyst 43, 156-8 (1918).—Two samples prepared from fresh livers of the dog-fish (squalus acanthias or Acanthias vulgaris) gave the following results: 15 0.9175—9186, saponification no. 161.0—168.3, 1 no. (Wijs) 123.3—123.0, free fatty acids (as oleic acid) 0.33—0.42 per cent, unsaponifiable matter 32.94—9.48 per cent, n₂₀ 1.4755—1.4749, brominated glycerides insoluble in ether 19.25—24.95 per cent, optical activity (100 tube, Na light) 0.00—1.45 deg. Both the samples were cooled to —10 deg. for a considerable time and filtered through fine linen to remove the crystallin matter which separated. This crystallin matter consisted chiefly of glycerides, and contained only 7.3 per cent unsaponifiable matter.—(Chem. Abs.)

Peter Seelis, well known among the fish men on the water front. His partner in business, Mr. Demetri, while attending the funeral, died with heart disease.

The schooner "Lief E," which operates out of Seattle, was burned at Swiftsure Banks Nov. 19th—no lives lost.

FISHING COMPANY ESTABLISHES VICTORY LOAN RECORD.

Subscriptions of Employees, New England Fish Company Average \$427.63.

The record per capita subscription to the Victory Loan by any industrial plant employing over 100 persons has been set by the New England Fish Co. of Vancouver. The per capita subscription of its employees is \$427.63, and is exclusive of the company's contribution of \$55,000, which was made through its subsidiary corporation, the Canadian Fishing Co., Limited, \$50,000 to the Vancouver Fund, and \$5,000 to the Prince Rupert Loan.

Every employee in the Vancouver offices, warehouse, curing plant, cannery and cold storage plant subscribed, as did all the officers of the company's vessels, who happened to be in port during the drive. The fishermen, it is understood, subscribed through their union, and their contribution does not enter into the per capita calculations.

The New England Fish Co., and its branches, the Canadian Fishinf Co., Limited, The Northwestern Fisheries Co., The Atlin Fisheries, Limited, and the Doty Fish Co., have already invested in Victory Bonds and Liberty Loans over 50 per cent of their entire capital stock, and started right from the first loan.

The employees in Vancouver have consistently worked for patriotic purposes. Early in the war they contributed money to buy a machine gun, and every month have contributed a percentage of their wage cheques to the Patriotic Fund as well as subscribing to the Red Cross and other funds.

When this Victory Loan was launched they went out to set a record, and the results achieved have even surprised that optimist, Mr. A. L. Hager, manager of the concern. When the Canadian Fish Co. subscribed \$55,000, it was expected that the employees would go after an honor card. They subscribed 100 per cent., and then increased their subscriptions until the very gratifying per capita contribution of \$427.63 was reached. Victory Loan officials hail it as a record, and believe it will stand as a Canadian mark. An honor flag with many crowns has been earned.

HIGH FISH PRICES.

Today several hundred quintals of Labrador slop fish sold to a central mercantile firm for \$14.60 per qtl. This is unprecedented in the annals of the Newfoundland fisheries, but fishermen are looking for yet higher figures and are holding this grade for \$15.—St. John's Star, Oct. 30.

THEM'S OUR SENTIMENTS ALSO!

The weekly market letter of two Boston Fish Pier firms contain the following under date of November 14th:

"Thank God, the war is over." The era of destruction has past; that of reconstruction has just begun. Let us not forget the ideals which led us into the conflict.

Reconstruction will proceed more rapidly than is generally supposed because of necessity. Fish will prove a large factor in this reconstruction period, and we in the business must all stand shoulder to shoulder with the fishermen so that our production and distribution can be increased to the largest possible extent. It is not alone our patriotic duty, but a

duty we owe ourselves and mankind in general, with the world in the straits that it is, to use our greatest efforts.

Inefficiency in any branch of this business means loss of the one article of food that people can rely on at all seasons and times.

The end of the war means the return of a great many of our fishing vessels, principally steamers which have been leased to the Government for mine sweepers. It means the release of the men to man those boats. It means increased quantities, and if we use good judgment, increased consumption and decreased cost. To make it clear, if a retailer can handle one thousand pounds of fish a week, he could handle fifteen hundred and maybe two thousand pounds with no more help. The cost of handling the additional quantity will be no greater and in that way cost per pound reduced.

At no time in the history of this industry has it been healthier than to-day. You are certain of a constant demand. During the past year, thousands have eaten fish for the first time in their lives. If it is properly cooked and properly handled, it is a certainty they will continue to eat it. This means that you have more customers than you had a year ago, and it also means that you should hold that trade for the future.

Our Government cannot go into the fish business literally nor can it boom any individual or corporation in it, but it can and will advertise the value of fish as food. It can and will show people how to select it. It can and will show people how to prepare it for the table; and it can and will keep all the dealers within legal limits. What more can you ask of a government than this?

The watchwords of the fish business, beginning this minute, are: first, good goods properly and efficiently handled; second, a neat, clean store; third, an attractive display; fourth, cash and carry system or a charge for delivery. These will be taken up in their order in our future market letters.

During the period of the war, credits were contracted to a considerable extent, and now during the reconstruction period must be continued on a basis of weekly settlements.

We expect the retailer will take advantage of his present unexcelled opportunities. If so, he will be a factor in the community and a betterment to his country, his family and himself."

ALASKA SALMON FOR FRASER RIVER.

The U. S. Bureau of Fisheries is co-operating with the fishery authorities of Canada in an effort to increase the production of sockeye salmon in the Fraser River-Puget Sound region by the introduction of fish from Alaska. The successful outcome of the experiment to establish Alaska sockeyes in the Columbia River to replace the depleted native bluebacks has afforded ground for the belief that work of similar value may be done for the sadly curtailed runs of sockeyes that ascend the Fraser for spawning purposes.

Accordingly, there was brought from the Afognak (Alaska) hatchery of the Bureau a supply of sockeye eggs, which arrived at Seattle on October 23. On the same day 20,700,000 of these eggs were delivered in good condition to a Canadian hatchery inspector, who left with them at once for British Columbia. Most of these eggs are destined for the Canadian Government hatchery at Harrison Lake.

Canada Food Board's Fish Section Bulletin

"FISH IS THE ONLY READILY AVAILABLE SUBSTITUTE FOR THE MEATS SO URGENTLY REQUIRED FOR THE SOLDIERS AND CIVILIAN ALLIES OVERSEAS."—Henry B. Thomson.

CERTIFICATES FOR RETAIL FISH DISPLAYS.

Realizing the importance of consistency attractive displays of fish in retail stores, and with a desire to stimulate retailers to exercise some effort in this direction, the Canada Food Board and the Canadian Fisheries' Association will issue certificates of commendation to fish dealers who maintain attractive displays of fish throughout the year. This certificate will be in the nature of a Diploma, and will be awarded after an investigation by the Chairman of the Food Board and the President of the Canadian Fisheries' Association. There is no necessity to point out the value of this Certificate to the retail fish dealer, who is awarded one. It is one of the best testimonials possible, and the possessor will undoubtedly increase his business through having one. Dealers will be advised of details by the Food Board.

FOOD BOARD BOOSTING CODFISH.

After successfully creating a market for Pacific flat-fish, the Canada Food Board's Fish Section is now preparing to popularize Atlantic cod-fish. It is pointed out that over 200,000,000 pounds of cod are caught and landed by Canadian fishermen annually and the cod is one of the most prolific fish in Canadian waters, and capable of the greatest development. The home consumption of codfish has been very meagre, but it is thought that with some little educational work, the demand can be stimulated and codfish appreciated at its true worth. The Atlantic producers and distributors will aid the movement in putting codfish on the map.

Sample boxes of codfish have been sent to Lady Borden and Lady Foster, and both ladies write letters highly praising the quality and palatability of the fish. The Food Board are featuring codfish in their daily bulletins and in special articles distributed to the daily and weekly press.

FOOD BOARD'S FISH CALENDARS.

The Fish Calendar scheme of the Canada Food Board has been taken up by the trade in a most encouraging way. Orders for 126,000 calendars have already been placed. The calendar is five by nine inches in size, and was designed by the artist who painted the \$1,000 prize Victory Loan poster "If ye break faith."

The design of the calendar embodies a picture of a Canadian fisherman in oilskins and rubber boots, and also a view of dory fishing on the Grand Banks. The colors are green, blue, yellow and black, and is very neat and attractive. The price is three cents each with envelope, and an extra charge for printing names, addresses, etc., of \$2.25 per 100. Particulars can be had from the Fish Section of the Board.

NATIONAL FISH DAY.

The Food Board's Fish Section is highly gratified at the public's expense to National Fish Day. The press gave the idea great publicity, and the material supplied by the Board was widely published. The total consumption of fish on Thursday, Oct. 31st, is estimated at 2,500,000 lbs. Quebec Province consumed 755,000 lbs. National Fish Day should be a permanent date devoted to Canada's fishing industry.

LICENSES.

Wholesale and retail dealers in fish will require to renew their licenses for the year 1919. The present licenses expire on December 31st, 1918. A new questionnaire is being sent out which must be filled in and returned promptly.

FISH CAMPAIGNS TO CONTINUE.

The cessation of hostilities does not mean a cessation of Food Board activities. The food conditions in Europe are such as require the greatest efforts on the part of Canadians to conserve and produce food, and this condition will remain for a long time. The motive, however, will be changed from that of saving and producing food for our soldiers and our allies, to producing and saving food for the starving millions of Europe. In Northern Russia, some forty million people are cut off from food supplies, and at least five million will die of starvation this winter. This sort of thing is terrible to contemplate, and we must show that we are as ready to save and produce for humanity's sake as for the requirements of war. The Canadian people will be urged to make more use of fish than ever before—if not for duty's sake, at least for that of charity.

DAILY FISH BULLETINS.

The little illustrated daily fish bulletins issued by the Fish Section of the Food Board are attracting favorable comment in the press. These little items contain much information regarding our fisheries and the cartoons which accompany them are witty and well drawn. The Food Board will gladly send the matrices for cartoon and bulletins to any person interested for use in advertising and price lists.

ONTARIO GOVERNMENT PLAN TO TAKE MORE FISH FROM FISHERMEN.

A news despatch states that the Ontario Government find the supply of fish for their distribution scheme inadequate, and will consider legislation to commandeer more than 20 per cent. of the fishermen's catch to supply the demand. The Ontario fishermen will soon be wondering if Bill Hohenzollern passed some of his "for the good of the State" ideas over to the Hon. Findlay McDiarmid before he quit happy Hunland.

The Skeena River salmon pack this season will exceed 350,000 cases. For the whole of British Columbia the pack is variously estimated at from 1,300,000 cases to 1,600,000, but accurate figures will not be obtainable for some time.

From reports of survivors, the wreck of the seine-boat "Renfrew" was a very sudden affair. Apparently one sea party filled the boat and made her unmanageable; this was followed by a giatn breaker, which turned the boat bottom up, a third sea hurling the craft on to the rocky beach. Of the twenty-five persons on board when she left Nitinat Lake on the Sunday morning, thirteen were drowned, and at the time of writing only four bodies have been recovered. The "Renfrew" was a sixty-four foot boat, built at Tacoma, in 1917.

National Fish Day

Third National Fish Day a Tremendous Success—Observed all Over Canada—Great Stimulus Given Fish Trade—Food Board Co-operates with Fisheries Association.

The Third National Fish Day is marked off the calendar for 1918, but though past, it will be remembered as a memorable event in the annals of the Canadian Fish Trade. The idea of an annual day to be devoted to our fisheries was conceived by Mr. J. A. Paulhus, Vice-President of the Canadian Fisheries Association, in 1916, and in the fall of that year and in 1917, the scheme was carried out by the Association with considerable success. October 31st (Thursday) was set as the Canadian National Fish Day for 1918; and the Canadian Fisheries Association enlisted the co-operation of the Canada Food Board in making the celebration universal.

About a month prior to the date, the Association and the Fish Section of the Food Board set to work on the publicity. The Association's members from Coast to Coast took up the scheme with enthusiasm and a vast amount of circularizing was done, and every letter sent out by the Food Board and by the trade was stamped "Thursday, October 31st, Canada's National Fish Day. Order early and Boost!" The rubber stamps were supplied by the Association.

Capt. Wallace, of the Food Board's Fish Section, looked after the publicity. The press throughout Canada were supplied with special articles and cartoons; the Food Board's Provincial Secretaries lent a willing hand in their Provinces, and for a week prior to THE DAY, the trade advertised extensively in the newspapers.

The response was wonderful. Dealers from coast to coast put in a strenuous time filling orders from Wednesday to Saturday, and for four days the fish business boomed as it never did before. Fish were in good supply, and reasonable in price; dealers stocked up well for the event, and it was well they did so. Many centres were absolutely cleaned out by noon Thursday, and dealers worked all night Wednesday filling orders.

Vancouver Branch of the Association did splendid work. A special menu card and newspaper advertisement was designed and distributed; banners were placed on fifty street cars in the city; two hundred banners, four hundred pennants, and four hundred window cards were distributed for display on delivery waggons and in stores, and prizes of \$20 and \$10 were awarded four stores for attractive window displays.

RETURNED SOLDIERS IN FISHERIES.

A proposal is on foot to set aside Cowichan Bay and other fishing areas adjacent to Vancouver Island for the benefit of returned soldiers. The plan of the promoters, according to a British Columbia member of the Federal House, is for the government to provide the requisite capital. At the outset boats and gear will be furnished the returned men, who will receive all necessary instruction during their first trips to the fishing grounds. The catch will be sold in the open market, a percentage of the receipts to be held back, thus providing the nucleus of a capital fund which may later be used to secure freezing and cold storage facilities and possibly a cannery or can-

plants. In Montreal the Association Executive held a Fish Banquet, in the Windsor Hotel, at which Mr. H. B. Thomson, Chairman of the Food Board was the guest of honor.

At the Food Board office in Ottawa, a "Canadian Fisherman" representative was shown a huge pile of clippings from various Canadian papers which was ample proof of the way in which the press of the country endorsed the idea and the manner in which the trade advertised.

As to results. A conservative estimate of the fish consumed on National Fish Day compiled by the Food Board's Fish Section places the amount at 2,500,000 pounds. Some of the figures given us are as follows:

Montreal	355,000 lbs.
Toronto	222,400 lbs.
Winnipeg	100,000 lbs.
Ottawa	35,000 lbs.
Quebec	40,000 lbs.

A host of smaller towns averaged half-pound per head of population. The Province of Quebec, from which full returns were obtained, showed up as follows:—

Montreal	355,000 lbs.
Montreal District	150,000 lbs.
Quebec	40,000 lbs.
Quebec District	70,000 lbs.
Three Rivers and District	50,000 lbs.
Sherbrooke and Eastern Townships	60,000 lbs.
Beauce Districts	30,000 lbs.

This gives the Province a total consumption of 755,000 lbs. Adding the Winnipeg, Toronto, and Ottawa figures, the amount is 1,112,000 pounds. Figures for Ontario, which will probably come as high, if not higher, than Quebec, have not yet been obtained, nor have the figures for the West.

A gratifying feature of the National Fish Day is the fact, remarked by the trade, of the stimulus given fish. Business has been brisk ever since and there is no reason why it should not continue.

The success of National Fish Day is one more feather in the cap of the Association, and is an added proof of what can be done when everybody pulls together for the common good of the industry.

neries. The whole to be operated on a co-operative basis.

The proposition is before the government for consideration, and in the event of receiving their sanction, the administration of the project will probably be in the hands of the Provincial Reconstruction Commission.

Hon. Mr. Sloan, Commissioner of Fisheries for British Columbia, believes that there is a far better and more profitable field for the returned soldier in developing the deep sea fisheries. He points out that deep sea trawling will undoubtedly develop into an extensive industry on the North Pacific Coast and moreover is one in which the co-operative method of operation has been successfully demonstrated.

TO-DAY IS *Canada's National Fish Day*

*The Canada Food Board asks you to
observe it by eating at least one of
the dishes on this*

FISH MENU

Sample of Menu Card supplied by Vancouver Branch, C.F.A.

SOUPS

Fish Chowder (with dinner) . . . . .	.05
Cream of Tomato . . . . .	.20
Chicken Broth with Rice . . . . .	.15

FISH

Fried Fresh Herring, mustard sauce . . . . .	.35
Grilled Halibut Steak, Maitre d'Hotel . . . . .	.35
Baked Ling Cod au gratin . . . . .	.35
Grilled Salmon Steak, Remoulade . . . . .	.35
Grilled Salmon Trout, sauce tartare . . . . .	.45
Kipperd Herring and brown butter . . . . .	.35
Steamed Finnan Haddie, boiled potatoes . . . . .	.40
Smoked Alaska Black Cod . . . . .	.40
Steamed Little Neck Clams . . . . .	.35
Salted Codfish in Cream, family style . . . . .	.40
Fried Filet of Sole au beurre noir . . . . .	.35
Cracked Crab, Mayonnaise dressing . . . . .	.35
Dressed Crab with cold slaw . . . . .	.40
Curried Shrimps and Boiled Rice . . . . .	.50
Lobster a la Newburg . . . . .	.75
Baked Eastern Oysters a la Kirkpatrick . . . . .	.65
Deville Crab in shell . . . . .	.50
Fresh Crabmeat a la Creole . . . . .	.50
Fried Fish Cakes, cream gravy . . . . .	.35
Salmon Cutlets and Bacon . . . . .	.40

VEGETABLES

Steamed or Mashed Potatoes.	
Fried Sweet Potatoes . . . . .	.15

OUR OWN BAKED PASTRY AND DESSERTS

Pie with cream . . . . .	.15
Cup Custard . . . . .	.15
Deep Apple Pie with cream . . . . .	.15
Peaches and Cream . . . . .	.15
Rice Pudding . . . . .	.10

*The meat you will save
is needed here*

Steam Trawling and its Effect on the Fisheries

By COLIN McKAY.

The question whether the use of the otter and beam trawl depletes the fisheries—and if so, to what extent—has from time to time caused as much controversy in European countries as it has in Canada. The International Fisheries' Commission, which has its headquarters at Copenhagen, has for some years been investigating the subject, but its conclusions have not been of a very definitive character.

Among those interested in the fisheries opinions are strongly held, but arguments are perhaps somewhat influenced by self-interest—not certainly an unusual occurrence in this world. Owners of steam fishing craft generally hold that the use of the trawl has no adverse effect in the way of rendering the fishing grounds less prolific; in fact, some even contend that the action of the trawl upon the bottom is not unlike that of a harrow on a ploughed field—cleaning it, and stirring it, so that it produces a greater quantity of the vegetation and animalcules upon which fish feed. On the other hand owners of small boats hold that the use of the trawl is highly destructive, and that if not prohibited or strictly regulated will sooner or later destroy the fisheries and depopulate various sections of Europe.

In the North Sea, where trawl fishing has been carried on an extensive scale for years, there has been a considerable reduction of the catch of various species of fish. The quantity of plaice captured in the North Sea fell from 88,000,000 lbs. in 1903 to 48,400,000 in 1906; that of rays from 15,400,000. There has been also a considerable reduction of the catch of haddock and flat fish, notably flounders. In some fishing districts the number and even the total quantity of fish caught has shown an increase, but in the North Sea, generally speaking, there has been a marked diminution in the size of the fish taken.

In five years the average number of large flounders taken by a trawler daily fell from 18 to 2, and of medium from 81 to 46, while on the contrary the number of small flounders rose from 7 to 18. The number of large cod, sole and turbot captured has notably declined.

One complaint against the use of the trawl is that it destroys the sea weeds on the bottom, among which fish deposit their eggs. Many naturalists, however, declare that the spawn of the vast majority of fishes does not attach itself to sea weed on the bottom, but hatches in suspension in the currents of the sea. The young fry are said to seek the bottoms of sand and mud mainly for shelter.

Another complaint is that the trawl averages blindly, taking immature and useless fish as well as fish suitable for food. No doubt there is something in that; whether the spawn and fry are on the bottom or in a state of suspension there must be a considerable amount of destruction. But it should be noted that the steam craft which are mainly singled out for condemnation use trawls, the meshes of which are considerably larger than the meshes of the drag nets used by small fishing boats, or the meshes of the drift or stationary nets used in the coast fisheries. The French

official observes that the destruction of fry caused by the hand dip nets of the shrimp fishermen who wade into the sea to take their prey is quite appreciable, compared with the damage wrought by the large beam and other trawls used in combing the vast bottoms of the high seas.

The fact that in the North Sea, where intensive trawling has been practised for years, large specimens of the cod, haddock, soles, turbot, flat fish, etc., have become rare, no doubt gives support to the view that the trawl is a destructive engine of exploitation. At the same time it should be remembered that in Canadian waters, long before the steam trawler began to operate there, the depletion of certain areas was not an unknown phenomenon. These depletions have sometimes been attributed to over-fishing, and sometimes to migrations caused by the pursuit of predatory pests, like the dog fish. Certain kinds of fish like the mackerel, will be very plentiful on certain parts of the Canadian coast for a season or many seasons, and then for a season or many seasons they will be mysteriously absent. Overfeeding certainly will not account for these disappearances. Some natural cause is at work. Man's wit is not yet able to discover it; but some day he may. Many rivers in Eastern Canada formerly teeming with trout and salmon, gaspereaux and smelts, have become nearly barren of any kind of game or food fish. This depletion has been ascribed to over-fishing, and the damage of dams and the debris from mills. Artificial culture has been invoked to restock such rivers—not with conspicuous success. Old men have talked of climatic changes, marvelled at the spring talked of climatic changes, marvelled at the spring freshets and summer droughts, when the river shrank into the swimming holes, they knew in their youth; and darkly hinted that Providence was wroth with the natives thereabouts. Then the scientific forester came along, and calmly asserted that not Providence but the improvidence of man who had carelessly let loose the element in which the arch enemy of Providence is supposed to have his being over the watershed of the river, was mainly responsible for the incapacity of the river to bear fish as plentifully as it did in the old days. Careless sportsmen who haven't the wisdom of Indians have left camp fires burning in woods where the slashings of lumbermen made fine material for a blaze, and a conflagration swept a great forest. A river fed by a burnt over watershed becomes a roaring freshet in the spring, when the snow melts, sweeping the spawn of trout and salmon to destruction, and shrinks to a shallow brook in summer, swollen at times by rains, because there is no subsoil to hold the moisture and seep it gradually to the river bed; because, too, the greater the burnt area the more it is like a desert, incapable of absorbing moisture from the air and precipitating rain like a forest land.

And so with greater knowledge it may be discovered that trawling and other methods of fishing—though doubtless contributing causes—are not the main causes of the depletion of certain fisheries; that the operation of natural laws over which man has no

control affects the life of the sea in more potent and drastic ways than any artificial agency of man — though it may be discovered, too, that the principal factor in this deterioration of the denizens of the deep has its origin in some at present unconsidered practice of man, just as the long continued process of desiccation or drying up, which turned the cradle of the human race into bleak deserts of sand, no doubt had its origin in the careless use of fire by the nascent civilizations. Be that as it may, we no longer apostrophize the ocean in the manner of Byron; "Man marks the earth with ruin—his control," for good or evil, does not necessarily stop at the borders of the sea. No longer is it a generally accepted article of faith that the sea is inexhaustible; though it dies hard, that comfortable belief which by exonerating fishermen from any concern for their neighbors or future generations has rendered difficult the enforcement of government regulations designed to prevent the depletion of the fisheries. Nearly every Maritime government now assumes the right to regulate methods of fishing, and regards it as a duty so to do. Before the war there was in Europe an agitation to establish trawling zones in the North Sea under an international arrangement, giving to the various fishing grounds periodic opportunities of rest and recuperation, as a good farmer does with his fields. Since the outbreak of war there has been little or no trawling in some parts of the North Sea, but whether fish have increased in such regions remains to be seen. And un-

til the zone system has been tried, no one can say whether it will prove advantageous to the fisheries. With the great fleets of trawlers now employed there is of course the possibility that intensive fishing in the zones open to fishermen might offset the recuperation of the zones temporarily closed. The value of a close season for lobsters, which have a limited habitat compared with herrings or cod, is still a matter of dispute in some quarters.

One thing is certain: the steam trawlers cannot be ruled out of the reckoning, whatever may be their effect upon the fisheries. They are the mainstay of the fisheries of Great Britain, taking about 95 per cent. of the catch of England and Wales. They have greatly increased the supplies of fish available for the food of the people. They are continually extending the sphere of their operations, exploiting fishing banks previously unknown or unworked, making profitable trips to regions where sailing vessels could not be employed to advantage. On the west coast of Africa the more powerful type of steam trawler are able to work their trawls on banks at a depth of 240 fathoms. This ability of the steam trawler to work at great depth, as well as its capacity to range far afield and still land its catches in a fresh condition seems to offer a means of meeting the complaints direct against its method of fishing; that is to say, under proper regulations extensive fishing may serve to mitigate, if not entirely overcome, the evils of intensive fishing.

The Sea Fisheries of Europe --- France

In value the French sea fisheries come second, next to those of Great Britain, and as to quantity third, after Norway. The total value in 1912, the latest year for which full statistics are available, was £7,072,000 which includes the values of the oysters produced by oyster-culture and the fish from fish-ponds; subtracting these, the value for the sea fisheries proper amounted to £5,720,000. The fishing fleet comprised 29,451 boats and vessels, including 339 steamers, mostly trawlers, of an aggregate tonnage of 267,097 tons; while the number of persons engaged in the fisheries was 154,931.

There are important deep-sea fisheries, as well as inshore fisheries. The deep-sea fisheries (*grandes peches maritimes*) comprise the cod fisheries at Newfoundland, Iceland and the North sea, the trawl fishery, and the fisheries for herrings and mackerel, to which may be added the fishery for the long-finned tunny (*Germon*), and part of the fishery for the sardine. The cod fisheries at Newfoundland, Iceland and the North Sea ("Dogger Bank") are of great importance, the value of the product in 1912 being \$1,025,000; the 254 vessels engaged at Newfoundland caught 550,350 cwt. of fish, of a value of £727,221; 111 engaged at Iceland caught 267,667 cwt. of a value of £285,584 and 46 working in the North Sea took 7,664 cwt. valued at £12,100. The fish are brought back to France and most of them dried, in recent years largely for exportation. The headquarters of the cod-drying industry is at Bordeaux, where more

more than half the catch of green fish (*morue verte*) is handled. About one half of the cod is consumed in France (from which the tariff excludes practically all foreign dried fish), and the rest is exported to Spain, Italy, Greece, and the French colonies. The industry is buttressed by large bounties, both for the fishing and exportation, a system which was introduced in 1851, and last modified by a law of 26th February 1911. The primary object was to train seamen for the naval service, but the system has given rise to much discussion and criticism, some tracing the relatively slow development of the French fisheries to its continuance. Of late years a larger and larger part of the codfish catch has been taken by steam trawlers, both at Iceland and Newfoundland, where 30 steam-trawlers were engaged on the Banks in 1909. France spends more on her sea fisheries than does any other European country. In 1911 the amount was 5,627,396 francs (£225,000), and of this 4,901,198 francs, or £196,000 was spent on the "great" fisheries, viz. 463,425 francs as bounties on equipment, 3,309,273 francs as bounties on the produce (837,511 francs on "imports" from the fisheries, and 2,471,762 francs on exports), the remainder being spent on superintendence and assistance to the fishermen. The ports chiefly concerned in the "great" cod fishery are Dieppe, Fecamp, St-Valery-en-Caux, Granville, Cancale, St-Malo, Dunkirk, Gravelines, Boulogne, St-Brieuc, Paimpol and Treguier.

Trawling has been greatly developed of late years,

and some of the finest steam-trawlers in existence belong to France; in 1912 they numbered 271, or about 40 more than Germany possessed. They fish on the usual grounds, less in the North Sea than in the Channel, the Bay of Biscay, off the Portuguese coast, and farther south of Morocco and Senegal; also at Iceland and the Newfoundland Banks. The chief port for the steam-trawlers is Boulogne-sur-mer, which is the most important fishing port on the continent of Europe, the value of the fish landed annually before the war being about £1,200,000; it is also the seat of great drift-net fisheries for herrings and mackerel. Next to Boulogne as trawling ports come Arcachon and La Rochelle, and trawling of one kind or another is carried on from most of the ports in the north from Calais to Cancale; in the Bay of Biscay from Lorient to St-Jean de Luz, and in the Mediterranean from Banyuls to Martigue — in the latter case chiefly with the net slung between two boats.

The chief deep-sea herring fishery is carried on in the North sea in the same waters as those in which the Dutch prosecute the fishery, from the Shetlands to the Thames, from June to October, the herrings being salted on board; the principal ports concerned are Dunkirk, Boulogne, Dieppe, St-Valery-en-Caux and Fecamp. There is a valuable fresh herring fishery from the Thames to the French shores, from October to February, and also farther to the west. The quantity of herrings landed in 1912 from the deep-sea fishery was 358,226 cwt., valued at £313,326, and from the inshore fisheries 420,174 cwt., of a value of £244,831. The mackerel fishery is prosecuted on the south and west coasts of Ireland from March to June, the fish being salted on board, or iced; in 1912 the quantity was 25,913 cwt., valued at £36,397; there is also a fresh mackerel fishery in May and June, on the French side of the Channel and the northern part of the Bay of Biscay, which in 1912 yielded 198,034 cwt., valued at £227,281. The sardine industry is of great value. The fish (young pilchards) are caught along the whole of the coast of the Bay of Biscay as well as in the Mediterranean, chiefly with drift gill-nets, cod-roe bait being scattered in the water to attract the fish. The centre of the industry is Brittany, especially at Concarneau, Nantes and Douarnenez, and motor-boats are now commonly employed. The fishery is very variable, and frequent disputes and labour troubles occur. In 1912 the quantity of sardines taken was 295,917 cwt., valued at \$396,575. The exports in 1913 amounted to 5,490 tons, valued at about 10,000,000 francs, the best customers being Great Britain, the United States, Belgium and Germany. On the other hand, the imports of sardines (from Portugal and Spain) was 10,047 tons, of a value of about 13,000,000 francs.

France is the greater oyster-producing country in Europe — thanks to the impetus given to oyster-culture by Mr. Coste, with the influence of Napoleon III — the yield in 1912 was 2,294,362,600 oysters, valued at £1,164,860, so that the oyster is the most valuable of all the products of the sea. Oyster-culture is carried on at many places on the coast of Normandy and along the coasts of the Bay of Biscay. The value of the exports in 1911 was £1,373,000, mostly sardines, dried cod, oysters, herrings; the value of the imports was £2,580,000, mostly fresh fish (salmon, herrings and other sea fish), and sardines.

Belgium.

The coast is comparatively small, and the fisheries are not extensive, though still considerable. In 1913 the total fleet of fishing vessels numbered 454,206 were sailing boats, 29 steamers, and 20 sailing vessels with auxiliary motors; the total tonnage was 8,607, and the number of fishermen 2,077. There were 355 vessels (including all the steamers and nineteen with motors) engaged in trawling; 387 in shrimp trawling; 394 in fishing for sprats, and 174 in herring fishing. The total value of the fish landed in 1913 was 5,757,086 francs (£221,000), 3,555,148 francs representing the value of the fish landed by the steamers, and 2,201,938 francs the value from sailing vessels; all the former (or trawled) were landed at Ostend, as well as nearly half of the latter. The other chief fishing ports are La Panne, Blankenberghe, Nieuport, Heyst and Zeebrugge (of immortal memory) where 69 fishermen with 20 boats pursued their peaceful calling in 1913. The population of Belgium, before the war, was almost 8,000,000, so that the fisheries were unable to furnish adequate supplies. Great quantities of fish were imported, mostly from Holland, but also from England, France and Germany, and many foreign fishing vessels landed fish at Ostend. The large towns, as Brussels and Antwerp received most of their fish from Holland — skates and rays (very popular), cod, haddocks, soles, plaice, halibut, salmon, mussels, etc. The value of the imports in 1913 was 27,303,598 francs, or over £1,000,000 the chief items, being tinned fish, 4,442,708 francs; herrings, 3,796,365 francs; oysters, 1,067,636 francs; mussels, 1,894,743 francs. The total weight was 77,691 metric tons. The exports, of 10,463 tons, were valued at 9,275,649 francs, the chief items specified being tinned fish and "other fish and crustacea"; most went to Germany, Switzerland and France.

Portugal.

There are about 270 species of fish in Portuguese waters, the most esteemed being turbot, brill, sole, surmullet, tunny, hake and various spiny-finned forms of the southern seas; the sardine is the most important. The fishing boats range from almost archaeological types, likely the "rascas da Ericeira" and the "muletas," to the thoroughly equipped modern steam-trawler. Fishing gear includes spears and harpoons, lines and hooks of various kinds, seine-nets, gill-nets and trawls. The official statistics for 1915 show a total value of 9,307,000 escudos, and as an escudo is nominally worth about four shillings, this would represent about £1,861,000. The number of persons employed in the fishing industry was 46,957, the value of the material, including ships, boats and gear was 5,828,257 escudos. The value of the sardines in 1915 was 1,575,256 escudos. In 1913 the values of the fish specified were: — tunnies, £103,903; cod, £57,319; sardines, £796,500; flat-fish, £15,577; other kinds, £617,279; crabs were valued at £22,402 and lobsters and crayfish at £10,426. There are important fisheries in the estuaries and rivers, the fish comprising salmon, shad, lampreys, eels, mullet, etc. The drying of fish if chiefly carried on in Algarve with codfish and tunny roes; marinated products are chiefly mussels and fish of high culinary value; pickling is mostly done with sardines and tunny. Preserving in oil is of great importance, mostly with sardines and tunnies, which are exported in large quanti-

ties. Some years ago the rich trawling-grounds off the Portuguese coast were exploited by British and German trawlers, which landed large quantities of fish at Oporto for the Lisbon market — to the value of £91,863 in 1908 — but in 1910 by various enactments and duties the enterprise was stifled, and many of the vessels transferred to the Portuguese flag; in 1915 there were three Portuguese steam-trawlers and in 1912 the number was 32. They are not allowed to fish within three miles of the shores, or in the water of less than 100 fathoms in depth; which in many places is much beyond three miles. The chief fish consumed are dried cod and sardines. Most of the cod is imported, but for a number of years the old Portuguese fishing at the Newfoundland Banks has been revived, 38 vessels fishing there in 1915 and bringing back fish valued at 464,642 escudos. On the other hand, the import of dried codfish, mostly from Newfoundland and Norway, averages about 30,000 tons per annum; the value in 1913 was £914,000—only exceeded by the coal and wheat imported.

Spain.

With a coast line of over 1,300 miles, washed both by the Atlantic and by the Mediterranean, and with a population of about 20,000,000, fond of fish, it is not surprising that Spain has sea fisheries of considerable value. In 1915 the estimated total weight of fish landed was 145,000 metric tons, valued at about 102,000,000 pesetas (or francs), equal to £4,030,000. Over 80,000 men were engaged in catching fish, and some 150,000 altogether were employed in the fishing industries. The fishing fleet consist of 590 steamers and over 15,000 sailing and motor craft. It is estimated that from 25,000 to 30,000 tons of fish landed are exported, leaving about 120,000 tons for home consumption, or about 14 pounds per head, and, as will be seen below, very large quantities of fish, chiefly dried cod, are imported. The most important region is the north and north-east coast, where about half of the total quantity is taken. In Spain there are about 140 preserving works, 760 for salting fish, 420 for preserving in oil, and 218 for pickling; over 30,000 tons are dealt with annually in these factories. The fish caught and the methods of taking them are much as in Portugal. By far the most important is the sardine, and then the tunny. Sardines are got all along the coasts, but mainly on the north and north-west coasts, the chief centres of the industry being Guipuzcoa, Vizcaya, Asturias, Galicia and Santander. The sardines are taken with drift-nets (gill-nets), cod-roe bait, imported mostly from Norway, being usually scattered on each side of the net to attract the fish; by small purse-seines and by a great seine (*cercos reales*), not now so much used; in recent years large quantities have been taken by trawls. The sardines are used fresh, but the greater part is preserved, by salting and pressing, pickling, smoking (to a small extent) and chiefly by preserving in oil in tins. The centre of the tinning and exporting business is Vigo; from this port alone the exportation of tinned sardines in 1915 was 800,000 cases, weighing about 296,000 cwt., and valued at £1,037,000, while in 1917 the export (owing to the demand created by the war) rose to 1,200,000 cases, weighing about 471,000 cwt., and valued at \$2,695,000. In normal times the importing countries, in order of importance, were: — France, Argentine, Germany, Cuba, Great Britain, Italy, Chile, Belgium and Russia. France imports large

quantities of Spanish sardines, not only for consumption but for re-exportation as French sardines. Quantities of the tins bear labels in French and Italian.

Tunnies, of several species, are taken at certain parts of the coast (especially in the bay of Cadiz), in the huge stake—or trap nets known as *Almadra* (French, *madrague*; Italian, *tonnara*; Portuguese, *armacao*) many of which have been used on the same sites since the times of the ancient Greeks and Romans. Tunnies are also taken by other nets and by lines — trolling or whiffing. The Spanish catch is usually larger than that in any other country in the Mediterranean, averaging 70,000 fish, equal to about 7,000 metric tons. The flesh is preserved in several ways.

Trawling is carried on with various styles of trawls, the commonest method being with the net slung between two boats, or small steamers, (*parejas*, or pairs), but beam or otter-trawling is also largely developed. As long ago as 1882 two or three steam-trawlers, built at Granton, in Scotland, were engaged in trawling in Spanish waters. The steam-trawlers belong to various ports, as Coruna, Cadiz and Malaga, the northern vessels fishing mostly in the Bay of Biscay and those in the south to a great extent on the coast of Morocco. In 1912 Spain imported 53,510 tons of dried cod, valued at £1,502,000, chiefly from Norway, Iceland, Newfoundland and Great Britain. The heavy import duties bring in a revenue of over £500,000 per annum.

DEPARTMENT OF THE NAVAL SERVICE.

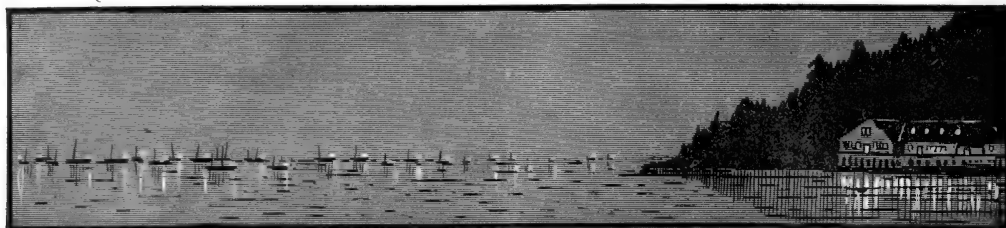
Notes on Sea Fishing Results for October.

Fishing operations during the month of October were greatly hampered by very stormy weather, which prevailed throughout the month on both the Atlantic and Pacific Coasts. The epidemic of Spanish Influenza also interfered with fishing in many places; many vessels were held up on account of the illness of the crews, and several canneries in British Columbia were obliged to close down. Another difficulty which the fishermen had to contend with was the great scarcity of bait in practically all sections of the Atlantic coast.

Notwithstanding these handicaps, the fishing results show a very satisfactory increase over October, 1917. The value of sea fish in first hands amounted to \$3,916,267, which is over half as much again as for the same month last year. The first hand value of sea fish in October, 1917, was \$2,531,166.

The quantity of cod, haddock, hake, eusk and pollock taken was 222,859 cwt., as compared with 153,702 cwt. in the same month of 1917. Cod and mackerel were reported plentiful, and a larger catch of cod would probably have been taken but for the scarcity of bait and the unfavorable weather conditions. Mackerel, however, fell earlier than last year in some districts, owing to so many storms, and the catch fell short by 6,521 cwt. In the Bay of Fundy where the weather was generally mild and favorable, a good catch of sardines was obtained; the quantity taken was nearly double that for October, 1917. The quality of oysters this season is good and 7,884 barrels were taken, an increase of 734 barrels.

There was no loss of life during the month.



PACIFIC COAST SECTION

PACIFIC COAST ITEMS.

Government assistance in paying transportation charges on shipments of Pacific Coast flatfish, to points in the four Western Provinces has successfully introduced these hitherto unknown varieties to an essentially meat eating section of the community. Publicity and low prices have won the early battles, but still greater familiarity with these fish by the prairie dwellers must be achieved before the market can be regarded as firmly established. The habits of a people cannot be permanently changed in a short period of time. There is the sporting spirit to "try anything once," but unless the newer product is easily and cheaply procurable at all times, and consistently brought to attention, the old tastes and preferences rapidly reassert themselves.

Western Packers, Ltd., are still further increasing their ice producing facilities at Butedale, and in the near future will have a 15-ton ice plant operating in place of the 5-ton plant in use last season. This will be welcome news to the halibut fishermen, who can be assured of speedy bait and ice service at this point.

A new firm of fish brokers is known as Chutter Ingalls Co., with offices in the Coleman Building, Seattle. For a number of years Mr. Chutter has been well-known as manager of the Booth Fisheries Co., in the State of Washington, while Mr. Ingalls was equally well-known as his assistant. Mr. Heacker has taken the position with the Booth Fisheries, vacated by Mr. Chutter.

HALIBUT SCHOONER MAKES BIG EARNINGS.

Five thousand dollars per man is the estimated return for each member of the crew of the Canadian halibut schooner, "Rennall," for the season January 1st to October 15th of this year. On one trip during September, four hundred and seventy-two dollars represented the individual earning. Captain Peterson, who commands, is also part owner of the vessel.

B. C. LIFE-SAVING SERVICE INADEQUATE.

The life-saving service on the West Coast of Vancouver Island should receive immediate attention from the proper authorities. Fishing has developed enormously in that section of late, consequently there is a large increase in the number of boats operating in the vicinity. Present facilities are regarded as totally inadequate, and the available equipment as being of little value under many possible circumstances.

At the time of writing, the Bamfield Station, with a motor life-boat and crew is the only one in active service, that at Ucluelet having been closed down, while the Clayoquot Station, with an oar propelled life-boat and a volunteer crew is only on duty during the winter time. Some criticism is levelled on the Bamfield crew, due to their reputed age. All these men are claimed to be over fifty years, and one of them in excess of seventy. If this be true, it is doubtful whether many of them are physically capable of rendering the difficult service, which at any time they may be called upon to perform.

Due to the character of the coast line between Clayoquot Sound and Carmanah Point, a distance of about seventy miles, which in many places is one of high cliffs, abruptly dropping to a rocky boulder beach—the point is made that attempted assistance from a life-boat to any vessel stranded on this particular section of the coast, would in all probability result in the life-boat sharing the fate of the original wreck. Two life-saving guns, stationed at convenient points between the two places named, and re-opening of the Ucluelet Station, are suggested as absolute necessities, if proper service is to be rendered to any vessels that may pile up on this treacherous shore, but in order to make even these arrangements effective there must be continuous telegraph service. At the present time the government telegraph offices are closed from Saturday at 7 p.m. until the following Monday at 8 a.m., and much might happen of serious importance during the intervening thirty-seven hours.

The fishermen and mariners operating off this coast express themselves strongly on the subject, and there seems to be no doubt that the attention called for is sadly needed.

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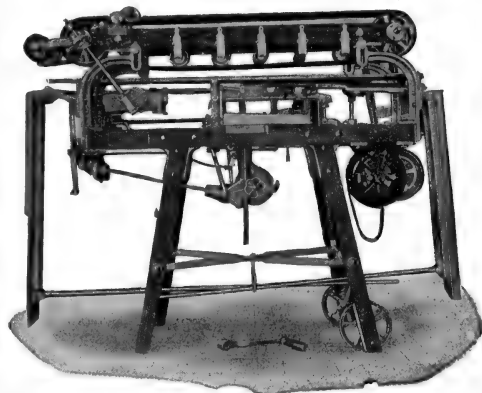
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INTERIOR WATERS OF BRITISH COLUMBIA OPENED FOR COMMERCIAL FISHING.

Food production on an extensive scale, in a new field, is assured as a result of the enterprise of Hon. William Sloan, British Columbia Commissioner of Fisheries, in securing passage of amendments to the Special Fishery regulations for the Province of British Columbia.

The order-in-council, opens for gill net fishing all fresh water lakes over four miles in length in the Fort George and Omineca Districts. White fish, char and lake trout may be taken in them all, with an additional provision for the capture of sturgeon in Babine, Fraser, Stewart and Francois Lakes. Drag-seines as well as gill nets may be used in Okanagan, Arrow and Kootenay Lakes, in the southern parts of the province.

Some two years ago an order was issued opening the waters of Stewart, Fraser, Francois and Babine Lakes to gill net fishing for the capture of white fish, char and lake trout, limiting the issue of licenses to bona fide local land residents. The object was to afford every opportunity and privilege to the resident land owners and pre-emptors, but the two years' trial has demonstrated that so few of these people desired to engage in commercial fishing, that the local demand for fish could not be supplied, and not withstanding that the lakes were found to contain an abundant supply for shipment along the line of the Grand Trunk Pacific Railway, as well as local market needs.

Several parties intimately acquainted with the northern country and lakes are already active, and in the near future cold storage and fishery plants may be confidently expected in the interior of British Columbia.

In addition to affording winter employment to the local farmers the new developments will likely attract to the country a desirable class of hardy men, most of whom will undoubtedly see the advantages of permanent residences in such a promising section of the province.

The new regulations regarding clams included in the same order were also made at the instigation of Mr. Sloan. American dealers have made a practice of engaging Indians to dig clams for export, with the result that the demands of the local markets and canneries exceeded the supply and substantially increased the price.

MACKEREL OFF THE BRITISH COLUMBIA COAST.

In the September issue of the "Canadian Fisherman," reference was made to a mackerel caught with pilehard on the west coast of Vancouver Island. Many experienced fishermen recognised this as a true Atlantic mackerel, but Dr. C. McLean Fraser, of the Pacific Coast Biological Station at Nanaimo, B.C., holds a different view. Dr. Fraser claims that it is the mackerel common off the California Coast, and not the common mackerel of the North Atlantic, although found in the Atlantic as far north as Maine. He also states that a similar fish is found on the European Coast, where it is generally called the Spanish mackerel.

The question is creating considerable interest in fishing circles, and another mackerel of the same species recently caught received many callers, and is put boat.

also going to be sent by Mr. Hager to a scientist for investigation. Mr. Kermode, Director of the Provincial Museum, Victoria, states that there is a specimen of mackerel in the museum, taken in the nets of Nanaimo Fisheries Co., in November, 1904.

While Dr. Fraser's report is accepted as accurate, Mr. Hager and others point out that this particular fish is not anything like the Spanish mackerel, which is caught off the Florida Coast, and sold extensively in the New York market, but of course the Spanish mackerel sold in New York and the mackerel known as Spanish in the European waters may be, as Dr. Fraser will no doubt advise, different fish except in name.

PACIFIC WHALE MEAT.

The man who "wanted some one to invent another meat animal," has had his wish gratified by a product of the sea. A million and half pounds of Pacific whale beef attractively packed in one pound cans, in addition to an almost similar quantity in a frozen state, are ready to furnish the seeker after variety with a change from beef, pork and mutton.

War time experience has usually been that the food controller's substitutes have been more expensive than the article displaced, the only exception being sea foods, and here again succulent whale steak as a substitute for the beef variety is within the reach of all, at not exceeding 20c per lb. "All meat and no bone" at the figure is almost unbelievable, in this day and age.

The whale meat is secured on the Pacific Coast and placed on the market through the enterprise of the Consolidated Whaling Corporation, Ltd., and associated organizations. Three varieties, viz.: humpbacks, finns and sies, furnish meat for human consumption. Great care is exercised in handling the animals intended for either packing or freezing, only the youngest and those freshly killed being converted to either use. The canning plant at Naden Harbour is new and therefore completely modern in every respect. The plant at Kynngnot is equipped with cold storage facilities.

The whaling industry is not only of value as a food provider, but is also a big producer of glycerine. Most all whale oil averages 10 per cent. of this commodity, the balance being largely used for soap making purposes, which in view of the shortage of fats is of greater value than generally known.

The season's catch of the Consolidated will probably exceed one thousand whales.

MUD SHARKS ARE A PROFITABLE CATCH.

There is now a ready market for North Pacific mud shark hides, oil and the dried meat. Alaska fishermen have already benefited by the new conditions, with a considerable number of hides, and many gallons of liver oil to their credit. Mud sharks are plentiful in the bays and inlets of British Columbia, and their capture should prove a profitable off season occupation for the fishermen of this province.

Word comes from Prince Rupert, of the death of Capt. Knighthall, who for the past five years has commanded a Canadian Fish & Cold Storage Co. halibut boat.

THE FRASER RIVER SALMON SITUATION.

The following article from "Boggles Booster," a clever little sheet issued now and then without advertisements in Seattle, Washington, by the Seattle Can Company, "for its friends," is a frank admission that many in the trade have been obstructionists to the constructive policies advocated by the scientific investigator of the salmon fisheries of the Fraser River, in the service of the British Columbia Government, who it says "are optimist with the previal that hesitation must not prevail against remedial measures that are plainly demanded." Boggles states the case very well.

Let's Look for Truth.

"Certainly every fisherman, every canner and every man in a business that is dependent to a considerable extent on the salmon industry is doing some hard thinking these days about the future of the Fraser River Sockeye run.

The present is painful. Is the future to be permanent failure?

"The Fraser is fished out," says John P. Babcock, assistant commissioner of fisheries for British Columbia. And everybody who knows Mr. Babcock knows that Mr. Babcock knows.

Mr. Babcock reported to Commissioner William Sloan that there are no Sockeye in many of the northern sections of the watershed, and too few in all sections to produce even a small run four years hence. Less than a dozen Sockeye had reached Quesnel Lake up to September 5. The run in the Chilcotin River has been the smallest ever known there. The Indians have taken less than 1,000. No Sockeyes had reached Seton-Anderson Lakes on September 9, or Shuswap-Adams Lakes up to the 10th.

Not One Good Lake.

"Conditions this year," said Mr. Babcock, "are even worse than they have been. None of the great lakes, like Quesnel, Chilco, Seton and Anderson, Shuswap and Adams, have any brood Sockeye. Lilloet Lake, at the head of the Harrison Lake section, is the only one that has any number of spawn fish, and the run there will not equal those that spawned there four years ago."

The Pacific Fisherman, in its September issue estimated the pack of Sockeyes on Puget Sound for this season at 40,000 cases, and recalled that the output in 1914 was 335,230 cases. Mr. Stedman H. Gray, editor of the Fisherman, continues:

"The Sockeye season on Puget Sound has been even more of a failure, as compared with corresponding years in the past, than that of 1917, and would seem to indicate an even more serious depletion of this species than anyone had realized. Many packers were prepared for a run approximating that of 1914, but all the fish that have appeared could have been handled by one cannery of moderate size.

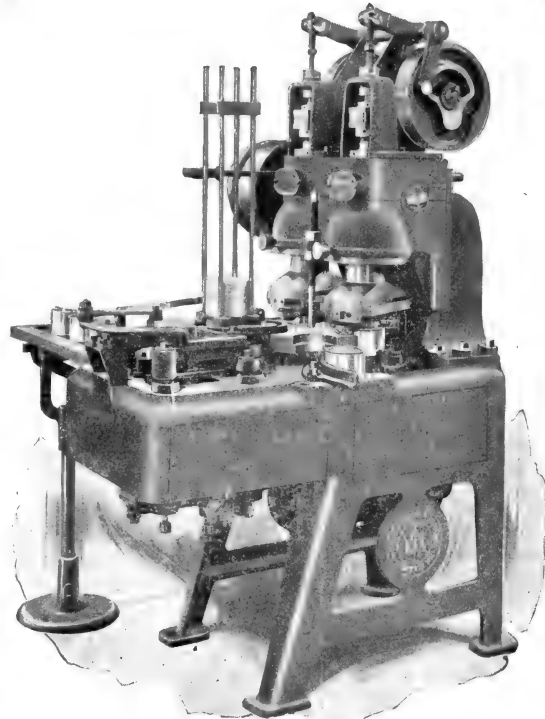
"The year as a whole is a disastrous one for the industry on Puget Sound."

In another place in the same issue the Fisherman says, under the heading

"Sockeye Season a Failure."

"The pack of Sockeye salmon on Puget Sound is a complete failure, the output being the smallest, according to the best estimates now available, since 1893, when the salmon fishery of the district first

Troyer-Fox Two-Spindle Automatic Double Seamer



Speed, 75 cans per minute

A Spiral Timing Device taking the cans from a continuous running belt, feeding them into the machine with no chance of jam.

A no can top feed accurately placing the tops on the can as it passes into the turret leading up to the first seaming operation.

Cans stand still during the two seaming operations.

The seaming rolls are carried on two large ball bearing spindles—rolls mounted on roller bearing adjustable to one thousandth of an inch. Seaming roll adjustments are quickly and easily made, and when set do not need constant change.

Machine will run all day with no stops for oiling up.

4 DS

Weight—2,000 lbs
Size cans handled—
2½ to 4½" diameter
2 to 5¼" high
H.P.—1
Gear Ratio—11 to 1

6 DS

Weight—3,500 lbs.
Size cans handled—
4 to 6 ¾" diameter
3 9/16 to 9 ½" high
H.P.—2
Gear Ratio, 15 to 1

A closing machine that will give you continuous satisfactory service.

Write for catalog.

SEATTLE-ASTORIA IRON WORKS

Builders of Troyer-Fox Sanitary Can Making and
Cannery Machinery, Seattle, Wash., U.S.A.

Seattle, Wash.,

U.S.A.

began to assume commercial importance. Many canneries were closed entirely during the time the Sockeyes were expected to run, and those that operated had only fish enough to keep them going a small part of the time.

"Nothing like a real run appeared at any time during the season. The pack in 1914, the corresponding year in the previous cycle, was 335,230 cases, and packers felt justified in preparing for an output of somewhat similar proportions; but it now appears unlikely that the figures for this year, when the final total is made up, will be more than ten per cent. of that amount.

"There were fewer than 150 purse seines operating on the salmon banks this season, against over 400 last year, yet the average catch for the Sockeye season was not over 300 fish per boat, and few if any of them made enough to cover expenses; and catches in the traps were correspondingly small.

The One Thing.

These appear to be facts stated about as plainly as the best master of English could put them.

What are we (the Seattle Can Company counts itself a part of the salmon industry, and the "we" means all interested parties, including the consuming public) going to do about it?

If we are wise we will not be much interested any more in what caused the annihilation of the run, whether it was over-fishing, or the blocking of the Fraser Canon, or what not, except so far as a study of the causes may help to indicate the remedies.

Restoration of the run must be the sole object of our thought.

To find the truth, we must clear our eyes of the passion for immediate gain, and look with clear vision to the distant heights of abundant, economical food for the multitude.

If we can unite upon this ideal of service, substantial profit in the salmon industry for capital in larger volume than now and labor in greater numbers than now must follow as the night the day.

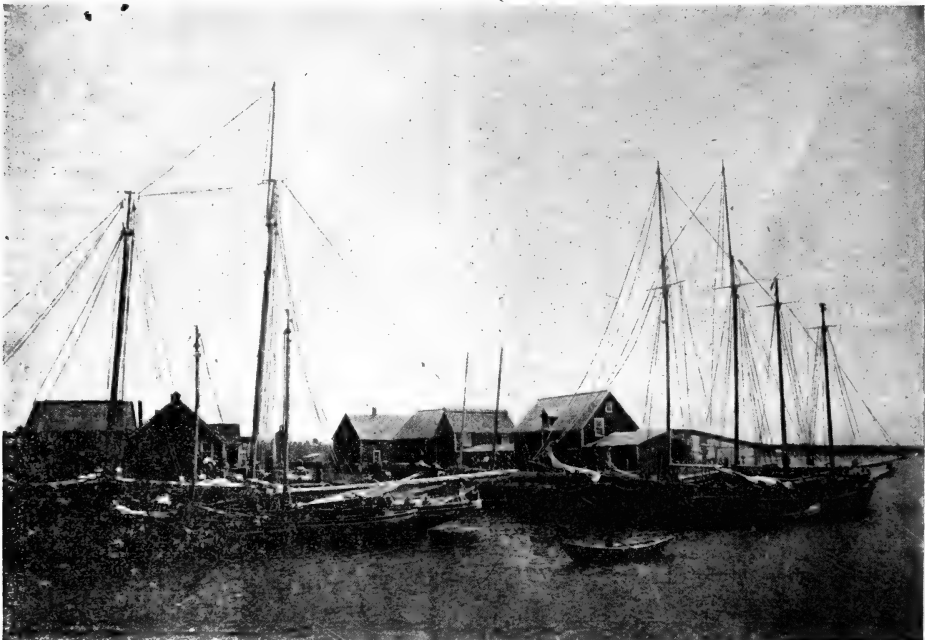
What is Needed.

The advertising that canned salmon is getting, by virtue of the commandeering of nearly all supplies, among the men who are going to rule this and allied countries, throughout the quarter-century after the War is won, assures a demand in the future such as probably could not have been created in fifty years by the normal methods of pre-war times.

I for one fear very much that many of us, if we can do the almost impossible thing of admitting the cold truth to ourselves, will confess, in the secrecy of our own souls, that we have been obstructionists to constructive policies. Not strange, if true. And anything but fatal to the future, if we will but realize its truth.

Without mentioning names, of which many could be set down, it can be said with fairly inclusive accuracy, that the scientist, including Canadian and American governmental experts, who are working on the problem, are able and unselfish. And they are optimists, with the proviso that hesitation must not prevail against radical measures that are plainly demanded.

I suspect that the principal thing that is required of us is that we should be willing to assent to plans that pinch some.



Fish curing plant of Ray N. D'Entremont, at West Pubrico, N.S.



SHARP FISH FREEZER & STORAGE ROOM NFD. ATLANTIC FISHERIES LTD.

WE REFER YOU TO ALL OUR CUSTOMERS
THEY ARE OUR GREATEST ASSET.

WE SELL
YORK ICE
MACHINES

AT YOUR DISPOSAL
CIMCO SERVICE

CANADIAN ICE MACHINE CO., LTD.
WINNIPEG TORONTO MONTREAL

A. E. HALLETT,
BROKER
FRESH AND FROZEN FISH
Correspondence solicited

Ref., Corn Exchange National Bank, or any Chicago
wholesale fish concern.

31 W. Lake St. :: :: CHICAGO

Readers of the "Canadian Fisherman"
desiring to know more about the

"Henderson Fish Preserving Process,"

which is patented in Canada and other
countries, should communicate with

GEORGE HENDERSON

Box 2449, G. P. O.

SYDNEY, AUSTRALIA

The Vancouver National Fish Day Fund Committee had heard many glowing accounts of the hospitality of Mr. A. L. Hager. They now believe all that they heard, and then some.

Deaths in fishing circles as a result of Spanish influenza.

VAC
Rubber
Boots

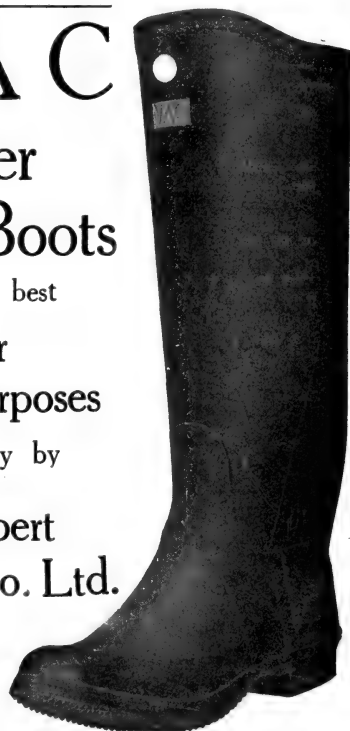
are the best

For
All Purposes

Sold only by

The Robert
Taylor Co. Ltd.

Halifax,
N.S.





I. M. VINCE, Manager, International Fisheries Co., Ltd., Vancouver, B.C.

Mr. I. M. Vince, Manager of the International Fisheries, Ltd., Vancouver, B.C., has chosen a unique trade mark, reproduced herewith. The figure on the barrel is that of "Old Billy" Mann, the first licensed fish auctioneer in Great Britain, and the man who introduced the process of kippering fish into the Old Country, and what is more to the point, the grandfather of Mr. Vince.

The manager of the International Fisheries is not by any means a novice at the business of fish curing. As long ago as 1881 he was awarded a medal for this class of work at Norwich, England, repeating this in Yarmouth the following year, and gaining still greater and higher honors at the International Fisheries Exhibition held in London, England, 1883. Altogether Mr. Vince has almost fifty medals and other decorations for proficiency in fish curing, and for this reason the product of his concern, which will handle many varieties of cured fish, will no doubt prove of high grade.

It is ten years since Mr. Vince has arrived on the Pacific Coast, but he absented himself from Canada for a while on a little trip to France, where he had the satisfaction of reducing the German population to some extent. One of his sons has made the supreme sacrifice in the same cause, and another is actively serving the Empire at this time.

Improvements and extensions have been made to the International Fisheries' plant on False Creek, and Mr. Vince has the best wishes of the entire trade for a long and prosperous occupancy.



"BILLY MANN,"

Manager of original steam trawling operated from Aberdeen, Scotland and first licensed fish anchor in Great Britain. Grandfather, I. M. Vince, International Fisheries, Vancouver, B.C.



Consignment of six hundred barrels of green cod fish, and five hundred barrels of dry cod fish.

Theatres were closed down in Vancouver on National Fish Day, preventing Capt. Wallace's Pacific Coast fishing film from being exhibited. Due to the enterprise and kindness of Mr. A. L. Hager, the fishing fraternity were given an opportunity of seeing the picture. Mr. Hager obtained a special portable machine, and a screen was erected in the shipping room, enabling a large crowd to witness what was declared by all present, the most interesting moving picture ever presented.

Mr. Martin, for many years purchasing agent for Wallace Fisheries Limited, died of the "flu."

Engineer Evans of the steamer "Canada," fishing out of Vancouver.

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

119 Youville Square,

MONTREAL

I am in the market at all times to Buy or Sell on Commission,
Fresh, Frozen, Smoked and Salt Sea and Lake Fish, in Carload
Lots or Less.

Correspondence Solicited

License No. 1-017

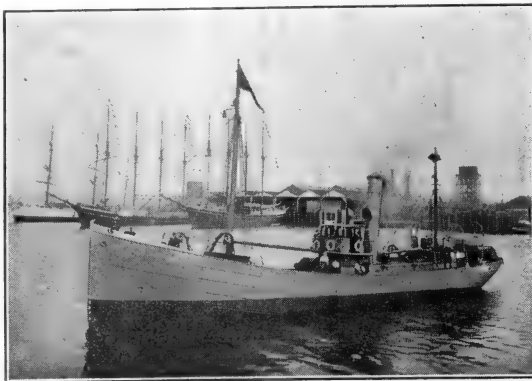
Representing

National Fish Company, Limited

Halifax and Port Hawkesbury - N. S.

"National Brand"

*Hadaies,
Fillets,
Kippers,
Bloaters,
Scotch Cured
Herring.*



STEAM TRAWLER TRIUMPH

Producers

*Fresh,
Frozen
and Salt
Sea Fish*

LAKE FISH

J. Bowman & Co., Port Arthur, Ont.
Wabakin Fish Co., Montreal, Que.

BONELESS COD FISH

R. E. Jamieson, Rustico, P.E.I.
License No. 1-036.

SEA FISH

A. W. Fader, Canso, N.S.

National Fish Co., Ltd., Halifax and Port
Hawkesbury, N.S.



Herring at Watson Bros. Curing Plant, Port
Alberni, B.C.

Messrs. James W. and John E. Watson, are the brothers in Watson Bros., fish curers, of Vancouver, B.C. Their plant, recently erected on Industrial Island, in the western seaport city, is depicted on this page.

The new building has a floor space of 18,000 sq. ft., and is thoroughly equipped with every modern appliance for the purpose of the business conducted, and includes what is claimed to be the largest smoke house in British Columbia, with a capacity of 40,000 lbs.

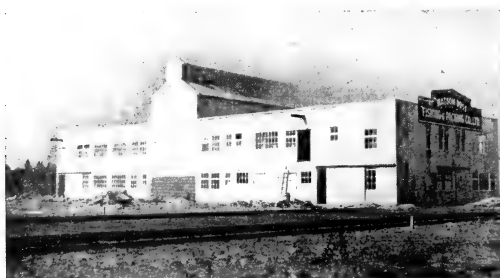
Both the brothers have had a life long experience in the fish curing business, starting operations on

the Pacific Coast about ten years ago, and have today in addition to the establishment already mentioned, plants at Alberni and Nanaimo on Vancouver Island, where bulk of the Scotch curing is done, and from which nearly 12,000 barrels of this particular variety were turned out last year. This firm were among the pioneers in the Scotch curing business in British Columbia, and were responsible for bringing out to the Pacific Coast quite a number of women "born into" the process in the Old Country, a few of whom are shown in the accompanying picture. Confining their business almost exclusively to the treatment of herring, Messrs. Watson, Bros. cure them in practically every known marketable manner.

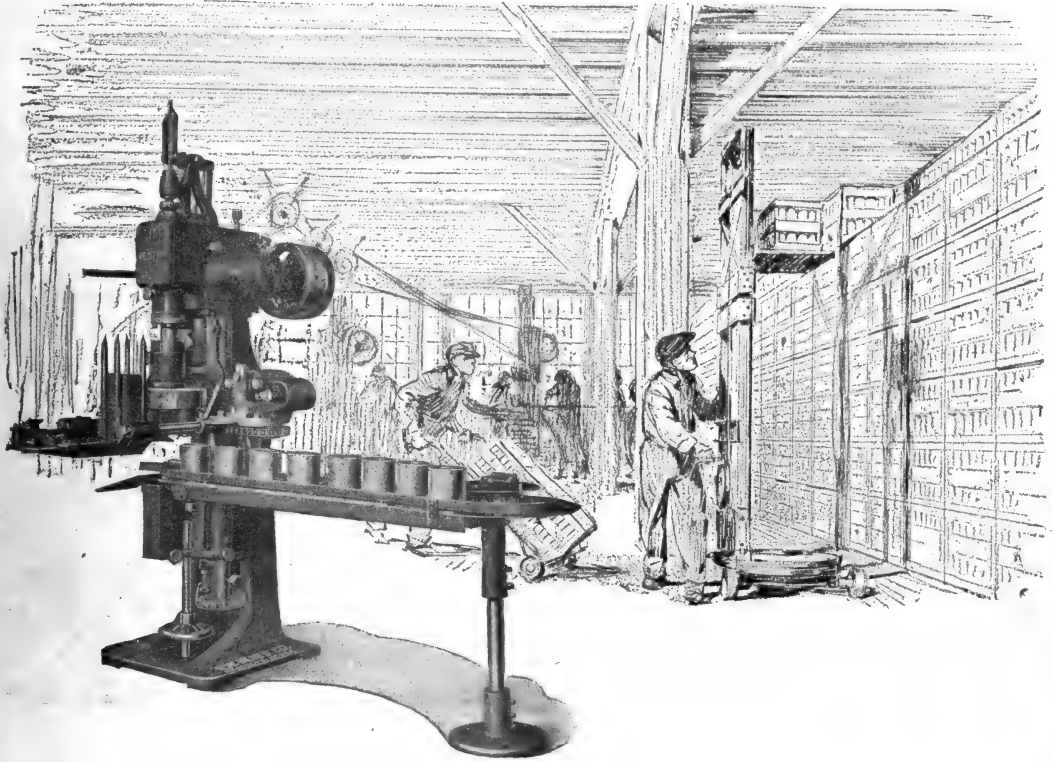
The firm also own and operate their own coo-perage plant in Vancouver, and produce a high grade of barrels from British Columbia fir, for the Scotch cured trade, supplying other curers in addition to their own establishment.

The "Canadian Fisherman" regretfully records the decease of Elles Jacob Millard, for many years connected with the Dominion Express Co., at Vancouver, B.C.

The Vancouver Maritime Exchange, with quarters in the Winch Building, is now in process of organization, and the manager, Capt. Stewart, reports satisfactory progress.



Watson, Bros. New Plant, Industrial Island, Vancouver, B.C.



SEALING FILLED CANS

When the "speed-up" is at its height and minutes count in the mind of the anxious manager—then is the time when he appreciates "Bliss" Automatic Double Seamers.

The can supply and the operations of packing must flow smoothly and without interruption abreast of each other until the last case has been added to the pack.

"Bliss" Equipment—complete—has been taken to the

far parts of the earth where repairs or replacements would be difficult if not impossible to obtain—and has made good.

"BLISS" AUTOMATIC DOUBLE-SEAMING MACHINE No. 31-K is illustrated, above. For sanitary cans—the cans remaining stationary. May also be used in can shops for double seaming the ends on empty can bodies. Continuous chain feed delivers filled or empty can bodies to the seaming position at uniform speed. Covers fed automatically.

Write for Catalogue Section No. 18-A



1857

E. W. BLISS COMPANY

Main Office and Works; BROOKLYN, N.Y., U.S.A.

CHICAGO OFFICE
People's Gas Bldg.

DETROIT OFFICE
Dime Bank Bldg.

CLEVELAND OFFICE
Union Bank Bldg.



1917

~ NDON, S.E., ENGLAND, Pocock Street, Blackfriars Road PARIS, FRANCE, 100 Boulevard Victor-Hugo St. Quen



"Scotch Curers," at Watson Bros. Plant, Port Alberni, B.C.

Not so long ago, when a passenger auto had by reason of age, shamed its owner into purchasing a new one, the discard was equipped with a "commercial" body and wished on a novice in the realm of motor transportation. The next purchase of the erstwhile novice in the commercial car line was an auto truck specially constructed to met his particular hauling problem. In much the same way a fishing craft in many instances had been anything from a yacht to a ferry boat, re-modelled. The class of fishing boat referred to is that craft-of-all-work, which in the space of a few hours is called upon to "purse" a seine, haul a load of fish or supplies, or tow anything from a fleet of small boats to a scow. Reasonable speed, ample carrying capacity, dependable power, and in these days of f'nickly labor, pleasant living quarters, are absolutely essential. Few of these re-modelled boats give the service required with an inevitable loss of time and money. Many of the concerns interested have long realized that a "business boat" constructed with a view to serve all the purposes outlined, was a necessity, but the boat-builders have until recently failed to grasp the opportunity. When the men with the right idea, put them into practice, the response was both quick and gratifying to the originators, Messrs. Ferrier & Lucas of Vancouver, B.C., who in studying this problem cast aside all prejudice and unhesitatingly took the best features of the existing craft and then modified or developed them in order to make a perfect purse-seine boat, which would also render the other services desired equally well. A fleet of ten boats of

this type have been built and delivered for fishing during the past season; distributed as follows: Canadian Fishing Co. (6); M. DesBrisay (2); A. B. C. Packing Co. (1); T. Ode (1).

The satisfaction expressed by the foregoing owners is the best indication of the merit of the boats. The past season has been a busy one, and has afforded a severe test in every way. Messrs. Ferrier & Lucas have rendered distinct service to the fishing industry of British Columbia, and at the close of next season the "Canadian Fisherman" will doubtless have the pleasure of recording a largely increased fleet of this type of boat, built and powered by this enterprising firm.



New Type "Purse-Seine" Boat. Canadian Fishing Co., Owners.

When the Catch comes in!

FROM purse-seiner to labeler, there is one *best* footwear—"Hi-Press". Its superiority over other footwear is so marked—so evident—that you cannot possibly go wrong with it. "Hi-Press" comfort means much when you are on your feet for long stretches and its remarkable wearing quality counts heavily in these war-days of tight purse-strings. Protect your health, ease the strain on your feet and economize—with "Hi-Press." It is the modern improved Boot; welded together under high pressure; it *can't* leak. 40,000 dealers recommend it.

The B. F. Goodrich Rubber Co.

AKRON, OHIO — The City of Goodrich

HI-PRESS

With the RED LINE
'round the top

The GOODRICH BOOT for Fishermen



THE BRITISH COULMBIA FISHERIES REPORT FOR 1917.

The B.C. Provincial Fisheries Report for 1917, which has just been issued by the King's Printer, contains a review of the fisheries of the Province for that year, reports from the salmon spawning areas and several valuable papers, including "Contributions to the Life History of the Sockeye Salmon," "The Native Oyster of B.C.," "The Sockeye Run on the Fraser," "The Salmon Fishery of the Fraser," "Contribution to the Life History of the Edible Crab" and statistics of the fishery products of the Province. This report was submitted by the Hon. Wm. Sloan, Commissioner of Fisheries at the last session of legislature in April last. Its publication has been delayed owing to the demands upon the King's Printer.

The report proper deals extensively with the salmon fisheries, reviews the report of the Special Fisheries Commission that sat in the Province in 1917, and contains a digest of the reports of the scientific investigation conducted by the Commissioner. It fully maintains the high standard set by former reports of this Department. The Hon. Wm. Sloan, the Commissioner of Fisheries, is to be congratulated on issuing so valuable a report.

The Value of Fishery Products.

The value of fishery products of the Province for the year ending March 31st, 1917, totalled \$14,637,346, or 37.33 per cent. of the fishery products of the Dominion of Canada, which totalled \$39,208,378. As in recent years the Province again leads the Provinces of the Dominion in the value of its fishery products. British Columbia exceeded Nova Scotia by \$4,544,444.000 and equalled the total combined fishery products of all the other Provinces of the Dominion.

The total value for the year shows an increase over the previous year of 99,026, owing to an increase in prices. The salmon and halibut both show a decrease in the salmon catch was slight, but the decrease in halibut was 7,182,000 pounds.

The number of persons engaged in the fishery totalled 18,355, as against 17,820 in the previous year. The value of shore plants, vessels, gear, etc., totalled \$10,376,303.

The Salmon Catch of 1917.

The Salmon catch of the Province in the year 1917 produced a pack of 1,557,485 cases. It exceeded the pack of the previous year by 203,584 cases, notwithstanding the serious shortage in the run of sockeye to the Fraser River. The gain is due to an increased pack of salmon and chum salmon in all sections save the Fraser.

The failure of the sockeye to run to the Fraser as abundantly as in former big years was the most serious feature of the 1917 season, in both the Province and the State of Washington. The pack in Provincial waters of the District totalled but 148,164 cases, as against 736,661 cases in the previous big year, 1913; 585,434 cases in 1909 and 837,489 cases in 1905. The catch of sockeye in the State of Washington waters of the Fraser District produced a pack of 411,538 cases as against 1,664,827 cases in 1913 and 1,005,120 cases in 1909. The pack of the district in 1917 totalled 559,702, or 1,841,789 cases less than in 1913, a decrease of 76 per cent. The total pack of sockeye in the entire District in 1917 was 176,959 cases less than the pack in Provincial waters of that district in 1913. The remarkable decline in the run of sockeye

to the District in 1917 was unquestionably due to the failure of the run of 1913 to reach the spawning area of the Fraser basin. The condition in that section described in the report for 1913 are quoted to show that the decline was due to the blockade of the Hell's Gate Canyon in that year. The following concluding paragraph in the 1913 report forecasted the decrease. "These facts warrant the conclusion that the number of sockeye which spawned in the Fraser River watershed this year was not sufficient to make the run four years hence even approximate the run of either 1905, 1909, or 1913."

Conditions in the Fraser River District are dealt with at length in the Commissioner's report and in greater detail in the special papers in the appendix of the report. The importance of the matter fully warrants the details given. The case is a clear one and demands the attention which the Provincial Department has always given it, and which it is now receiving by both the Canadian and United States Governments.

The Spawning Beds.

The reports from the spawning grounds of the principal salmon streams of the Province indicate favourable conditions in all save that of the Fraser. In the latter basin it is shown that there were far less fish than in 1913, and few, if any more than in some recent "lean years". Mr. Babcock, the Commissioner's Assistant, who made the investigation of the Fraser, concludes his report with these words: "In comparing conditions this year, with those of 1913, I am of the opinion that the number of sockeye which spawned on the Fraser watershed this year was much smaller, and not sufficient to produce a run four years (1921) hence, that will equal in numbers those caught this year."

The Appenda of the Report:

The appendix of the report contains three valuable conditions to the life history of our salmon, oysters and crabs, as well as two very able papers on the condition of the Fraser River salmon fishery, that add materially to the literature on this subject. Dr. Gilbert's fourth contribution to the life history of the sockeye salmon, given in the appendix of the present report, adds two additional years to the record of the salmon runs to the principal streams of the Province. The present paper contains a graphic analysis of the runs of sockeye to the Fraser, Skeena and Naas Rivers, and Rivers and Smith Inlets in 1916 and 1917, throws many sidelights on the life of these important food fishes, adds materially to the evidence of their remarkable homing instincts, indicates the data necessary to follow the question of sectional racial differences to a conclusion, deals with the significance of the run of grilse to the Fraser in 1916 and adds force to the statement that the runs of salmon to the rivers of the Province have received a close and discriminating study, unequalled in any other state.

As a result of the Department's study of the runs to the Fraser River the conviction seems inescapable that they consist of a number of sub-races, each bound for its own spawning area within that basin. If this be true, Dr. Gilbert points out, not only do sockeye return to their own river basin at maturity, they predominately return to the particular part of the river basin in which they were reared as fingerlings, in which case their homing instinct is far more rigid in its workings, than has heretofore been accepted. Do the salmon which develop from eggs deposited in the

ECONOMY AND CONSERVATION

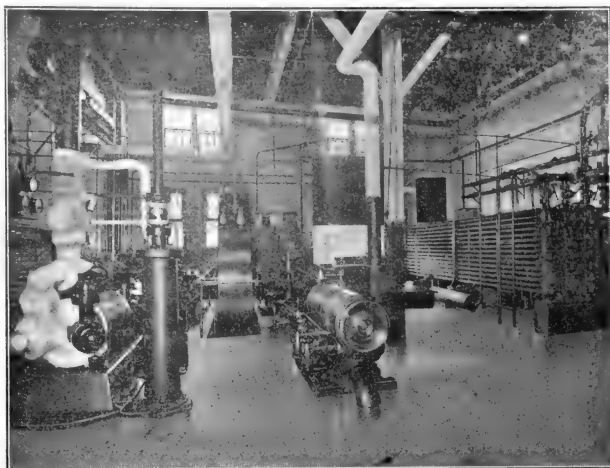
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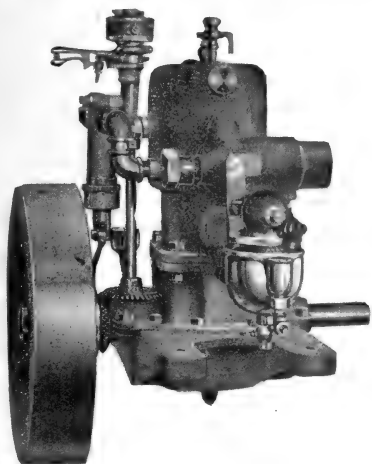
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gravel of the Horsefly River, a tributary of Quesnel Lake, return at maturity not only to the Quesnel, but also to the Horsefly? Data contained in Dr. Gilbert's present paper makes such a suggestion appear by no means improbable. This problem has such an important bearing on hatchery propagation, as well as the forecasts of future runs, that the Department will press it to a conclusion.

The Crab investigations of 1916 and 1917 add materially to the data already published by the Department. The present report presents facts bearing on cooking and marketing, notably the so-called "light" and "black" crabs that are of economic importance.

Dr. Joseph Stafford of McGill University, contributes to the Appendix of the report a valuable paper on the Native Oyster of B.C. in which he treats at length of location for growth, apparatus and construction work, operations of culture, planting, harvesting and shipping that affords the oyster grower a hand-book of great value.

The appendix also contains papers by Dr. Gilbert and John P. Babcock on the salmon fishery of the Fraser. Dr. Gilbert in dealing with the present conditions and the future of the sockeye salmon run to the Fraser, traces the history of the marked decline and submits data to show that the first serious damage was done to the sockeye run in the cycle of 1897-1900. During that period the pack in the three small years was double that of former lean years and that the increased catch necessary to produce it depleted the spawning reserve seriously, so seriously that in the following cycle 1902, 1903, and 1904 the pack was cut in half and the spawning beds in those years were but sparsely seeded and in succeeding lean years it suffered still further reduction. The pack in the three lean years never again equalled one million cases, notwithstanding that with each succeeding year the amount of gear employed was increased by leaps and bounds.

Dealing with the run in the big year of each of the four year cycle he submits that it could not be shown prior to 1913 that there was any impairment but in that year the accidental blockading of the Fraser canyon above Yale prevented a large seeding of the upper spawning beds. The result of this blockade was conspicuous in 1917 and demonstrated that it was a disaster of the first magnitude. It destroyed the big run for all time, unless extraordinary measures are taken to restore it. The big year, he says, must now be arranged in size and importance with the "off years". The facts with which we are confronted, he states, are (1) "The three off years very seriously impaired with an almost certain prospect of worse to come, and (2) the big year of which we have principally relied heretofore, a thing of the past. Nothing short of heroic remedies can restore the Fraser to even a fair measure of productivity. Yet the spawning grounds are uninjured and unsurrounded by any large population of either natives or whites, and the river channels are unpolluted. The fields are as ready as ever for the harvest. We need but to spare the seed."

Dr. Gilbert states that the one all important remedy for the existing situation is to permit more fish—many more fish—to escape capture and become spawners. Until adequate measures are taken to that end it is useless to discuss any minor remedy. To hope for results large quantities must be dealt with. If the Fraser were a private monopoly, to be hence-

forth wisely handled, it would now be promptly closed to commercial fishing for a term of years, and the entire run—now so sadly dwindled—dedicated to purposes of propagation. He advocates that this should be done for at least one cycle of four years, and the results carefully noted by a continued study of the spawning bed. Owing to the forethought of the Provincial Fishery Department there now exists adequate data for a comparison dating back to 1901. "No other sockeye stream has received such close and discriminating study." In consequence there is now ample information to judge with accuracy of a remedial measures adopted. If the river be closed to all fishing for one cycle of four years, it would be known well in advance what the result was to be, and the river and the sound could then be opened to restricted fishing, if conditions warranted, or if necessary closed for a further period of four years. This is, Dr. Gilbert states, the only method by which the run of sockeye in the Fraser can be restored with promptness and with any certainty of success.

The present report furnishes much additional data that is of economic importance. It demonstrates in a practical way the value of the work the Department has pursued in dealing with the question of conservation of our fish.

Billingsgate, November 2nd, 1918.

The past week has witnessed one of those great slumps in value so characteristic of the fish trade in this country. There were signs of prices giving way in the leading consuming centres when the week opened, and with generous supplies of many kinds coming in day after day the downward trend in rates soon became accentuated. Some kinds have continued short of requirements, but deep-sea trawled fish, together with herrings, sprats, and to a lesser extent mackerel, have been almost super-abundant. A feature of the landings this week has been the heavy quantities of fine large plaice, which on some day have changed hands in Billingsgate market round 7s. per stone, compared with a maximum figure of 18s. allowed by the Fish (Prices) Order. The generous supplies this week have revealed the acute shortage of labour; in fact, the quantities received at markets such as Billingsgate have not been in any way exceptional under normal conditions, but they have proved more than could be expeditiously handled under present circumstances. The slack trade and weakening values in the consuming centres speedily became reflected on the coast. However, to-day the tone of the markets is much more buoyant, and prices are recovering, and it would not be in the least surprising to see prices back at the other extreme within a few days. Trade has not been improved this week by the unseasonable weather, conditions being anything but conducive to the keeping qualities of fish—continual rain, together with a humid atmosphere. Naturally there has been no call for frozen fish, although choice frozen salmon and halibut would meet a ready sale.

The extraordinary run of pilechards on the West Coast of Vancouver Island, was keeping up as late as mid-November, with no sign of abatement.

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
- OF FISH PRODUCTS -

F. WILLIAM WALLACE
EDITOR

**The Industrial & Educational
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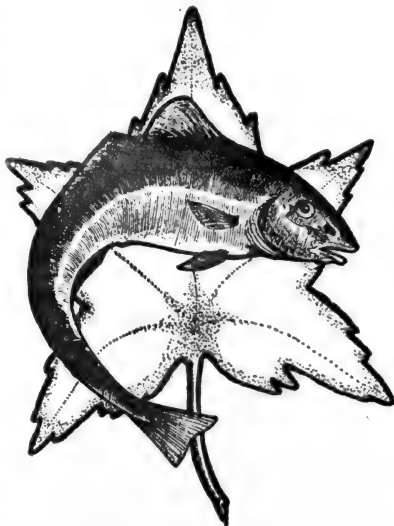
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Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, DECEMBER, 1918

No. 12

THE Editors and Publishers of "The Canadian Fisherman" join in wishing their many friends and those engaged in the fishing industry of Canada all personal happiness and business prosperity during nineteen hundred and nineteen. We also desire to extend to those connected with the fisheries and the fish trade who have been fighting in the cause of liberty a safe, happy and early return.



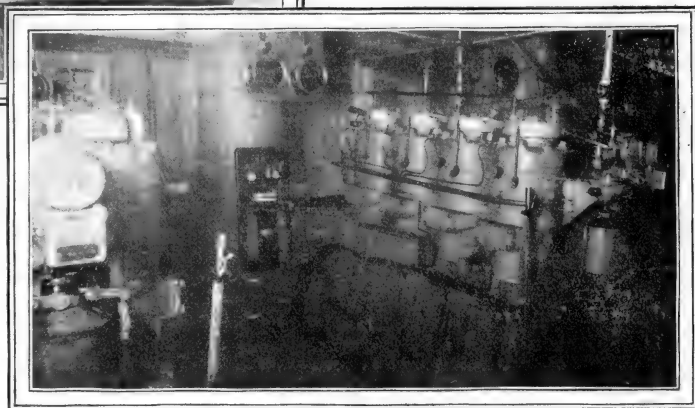
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PUBLISHER'S ANNOUNCEMENT.

This issue of the Canadian Fisherman has been somewhat delayed owing to the removal of our plant from Montreal to St. Anne de Bellevue, Que. In future, the Canadian Fisherman will be published from our model publishing plant—the Garden City Press—which, fully equipped with modern machinery and located in one of the most picturesque suburbs of Montreal, will give us an opportunity to greatly extend our work under the most favorable conditions. All mail for the Canadian Fisherman should be addressed "Garden City Press, St. Anne de Bellevue, Que." A business office is maintained in Montreal at Room 30B, Board of Trade Building, and in Toronto, at 412 C.P.R. Building.

1918—A RETROSPECTION.

The year 1918 opened with the Empire still in the throes of the Great War and the end uncertain, though we all felt that the outcome would see our arms victorious. The fishing industry came into closer contact with war measures by the extended scope of the Food Controller's Office, which became the Canada Food Board at the beginning of the year. Under their regulations, all wholesale and retail dealers in fish were licensed, and the former were called upon to report their operations monthly. The license fees charged were moderate, and the industry received an adequate return in the greatly stimulated consumption of fish through the Food Board's propaganda work in urging the public to eat more fish as a substitute for the meats required for export.

The fishing industry were exempt from price regulations except in two instances—that of the Western lake fishery and the New Brunswick sardine fishery. The prices fixed were regarded as fair by the trade and in the former case, the regulations resulted in greatly increasing the home consumption of fish from the waters of Manitoba, Saskatchewan and Alberta. The business of exporters may have been cut down somewhat, but the Food Board's object was satisfactorily obtained and the firms and individuals engaged in the Western lake fisheries co-operated loyally.

In March, 1918, the fishery and market for Pacific flat-fish and cods was established by the Food Board, and the Marine and Fisheries Department, and steam trawling on the Pacific got away to a good start. A new era has begun in the British Columbia fisheries which can be maintained in post bellum years. Prices on these fish were regulated by the Board, but purely for the purpose of creating a market and not as a restrictive measure.

As a fostering genius to the Canadian fishing industry, the Food Board assisted the trade in many ways too numerous to recount here and for much of the good work which has been done, the industry is indebted to the officers of the Canadian Fisheries Association, who co-operated with the Food Board to the fullest extent, and also took up many important matters with the railroad and express companies and Governmental Departments to the ultimate benefit of the fishing industry and fish trade. Two most important Fisheries Conventions were held during the year. One was the International Fisheries Commission of Canada and the United States—a notable outcome of which was the removal of the restrictions on Canadian fishing vessels running their

fish direct into U.S. ports. The basis was also laid by the Commission for eradicating much of the misunderstanding and friction hitherto existing between Canada and the United States on fishery matters. The second convention was that of the Canadian Fisheries Association at Halifax in August, 1918, at which many important matters affecting the industry were discussed and resolutions passed. Several of these will be acted upon this year, and good will result. The Association Convention was the largest fisheries gathering ever held in Canada and was a further evidence of the growing cohesion of the industry from coast to coast in matters affecting the progress and development of the fisheries.

The Association added two important branches to its membership—one in Vancouver and another in Winnipeg. It also, in conjunction with the Food Board and the Ontario Government Fisheries, maintained an excellent Fisheries Exhibit at the Canadian National Exhibition, Toronto, from August 26th to Sept. 7th, 1918.

The war was brought home to the fishing industry on the Atlantic Coast by the operations of German submarines from August to October. Several fishing schooners were sunk and the Halifax steam trawler "Triumph" was captured and used as a raider and ultimately destroyed. A new trawler was added to the Nova Scotia fleet in 1918 when the Leonard Fisheries, Ltd., purchased the "Baleine." The Maritime Fish Corporation, Ltd., chartered the Icelandic trawler "Ran" and operated her during the year. Six trawlers are now fishing in Canada—four on the Atlantic and two on the Pacific. During 1919, this fleet will be increased.

Hotels and home throughout Canada are using double the quantity of fish consumed prior to the war. Markets have been made for the commoner and cheaper grades of fish and the trade in frozen fish has received a considerable impetus. There is a noticeable improvement in the retail handling and display of fish and evidences of aggressive advertising in pushing the sale are becoming commoner every day.

Three valuable reports were issued during the year: The Canadian Plaice by Dr. Huntsman; the Report of the B.C. Salmon Fisheries Commission, and the Report of the Special Trade Commission to Great Britain, France and Italy. The two first named were issued by the Department of Fisheries—the latter by the Department of Trade and Commerce. These were in addition to the Provincial and Federal Fisheries Departmental blue books.

National Fish Day—an annual event inaugurated by the Canadian Fisheries Association—was held on October 31st, 1918, and was a phenomenal success—no less than 2,500,000 lbs. of fish being consumed on that day alone. The industry is indebted to the Food Board for their co-operation with the C.F.A. in making the annual Fish Day of 1918 a record breaker.

The exports of frozen fish to Great Britain which was a feature of 1917, fell off considerably during the past year—Newfoundland securing the bulk of the orders. The whole of the sockeye salmon pack and a large proportion of the higher grade canned salmon was commandeered by the British Ministry of Food in November and caused some confusion on the coast and disturbed the existing channels of trade. The canning of pilchards received some impetus through this condition,

and a considerable pack was put up to take the place of the commandeered salmon in the market. Fish remained prominently on the soldiers' rations during the year, both in Canada and overseas.

The past year has been a prosperous one for the fishing industry as a whole, and in the salt bank and dried fish trade, prices have been unusually high. In other lines of fresh and frozen fish for the home market, the price to the fisherman has been good, but to the consumer, there is but little advance over pre-war prices—the intermediate handlers being content with the increased volume of sales and small profits.

In the outlook for the future, the industry is hoping that the Overseas Trade Commission will be able to secure a good share of fish orders for export for Canadian producers. The propaganda for increasing home consumption should be carried on as aggressively as during the past year, if not by the Canada Food Board, then by the Canadian Fisheries Association working in conjunction with the Department of Marine and Fisheries.

The victorious conclusion of the war finds Canada's fishing industry in good shape and there is every reason to believe that 1919 will bring further progress, development and prosperity. It has been our pleasant duty to prophesy thus during the five years of the Canadian Fisherman's establishment, and each of these years has seen an advance in the value and prosperity of the Canadian Fish Trade and Fishing Industry.

NEXT ANNUAL CONVENTION, C.F.A.

From answers received by the Secretary, it seems to be the general desire of the Association's members that the next Convention be held in Vancouver, and many have signified their intention of attending.

The Pacific Coast deserves the Association's attention—not alone from the importance of its fishing industry and the many members located in British Columbia, but also from the fact that very few of our middle West and Eastern members have crossed the Rockies and beheld the wonders of the West Coast. Most fish men are too busy to take the time off for a mere pleasure tour to the Coast, but the combination of pleasure and essential business as afforded by the Convention makes an ideal scheme in which the two can be combined.

The Vancouver members, the Mayor and the Board of Trade have extended cordial invitations, and will see that the Association is accorded a hearty welcome during their Convention. The programme will be a most important one, as many after-war problems will be discussed and new lines of action recommended and acted upon.

Let all the C.F.A. members keep the Victory Convention in mind and begin now to arrange their affairs in order to attend the meeting. The date will be decided upon later and sufficient warning will be given.

CHARGE FOR PACKAGES.

Supplementing discussions upon the above subject at the Halifax Convention, a meeting of the Executive Council held in Montreal on December 4th passed the following resolution:—

RESOLVED that the Canadian Fisheries Association goes on record that fish packages (boxes, barrels, kegs, drums, etc.) should be charged for separately instead of being incorporated in the cost of the fish.

This, to our mind, is a step in the right direction, and should be adopted by all producers and wholesale dis-

tributors during 1919. The trade is well aware that the boxes are incorporated in the cost of the fish and the charge runs from half a cent to one cent per pound, but the general public has, of late, been stampeded into making accusations of excessive profiteering through ignorance of this fact. They hear of the prices paid the fishermen and of the prices charged by the wholesale and retail handlers who have to bear the package costs, and being ignorant of the custom, they write the Food Board or Cost of Living Commissioner and complain of the excessive spread between fishermen and retailer.

The fish trade in Canada is about the only one making no separate charge for packages. Dry goods, boot and shoe, grocery and other trades all make a charge for packages separately and their doing so affords a good precedent. In future, we would like to see the Association's recommendation adopted by the fish trade throughout Canada.

CANADIAN FISH CONSUMPTION INCREASED.

That there has been a considerable increase in the consumption of fish by Canadians during 1918 is an undoubted fact, and we hope in a later issue to give figures illustrating the increase. The propaganda work of the Canada Food Board and the Canadian Fisheries Association has been wonderfully effective, and the stimulus given to the home consumption of fish through war time exigencies, will, we feel sure, continue for all time.

Figures received by the Fish Section of the Canada Food Board from some of the retailers and distributors show gratifying increases—one Ontario firm selling a million pounds over the sales of 1917. Practically every wholesaler and retailer of fish in Canada has increased their sales and quite a number of new concerns have been established during the year.

The eating of fish has been effectively separated from Friday and we must strive to keep it away from the one day a week business. Fish should be just as much of an every-day food as meat and all our dealers should endeavour to make it so. The Fish Day, so-called, should be banished from the calendar, and any day or every day be a Fish Day. The meat trade have no orthodox restrictions in the way of Beef Days, Pork Days, Mutton Days, etc. To our mind, the relegation of fish consumption to certain calendar dates has done more to restrict the trade than anything else.

INCREASE IN EXPRESS RATES.

The Express Traffic Association of Canada sprung a mine under the front line trenches of the Canadian Fish Trade when they issued their recent application to the Board of Railway Commissioners for an increase in express rates. The increases asked are on a par with the demands of the Brest-Litovsk Treaty and if granted would wipe the Canadian home trade in fish completely off the map.

Needless to state, the application aroused a storm of protest from the trade concerned and both the Canada Food Board and the Marine and Fisheries Department have protested strongly against any increase being granted insofar as fish is concerned.

The President of the Canadian Fisheries Association, Mr. A. H. Brittain, and Mr. Spooner, Chairman of the C.F.A. Transportation Committee, took the matter in hand immediately and communicated with both the Food Board and the Fisheries Department. The Association intends to fight any increase whatsoever on express rates for fish, and all the members are solid in their protest

as it would practically ruin the business.

In our opinion, the express rates on fish at present are as high as the traffic can stand and one only need point to the fact that it has been necessary for the Government to bear one-third of the express charges, and two-thirds of all transportation charges on Atlantic and Pacific fish respectively in order to build up a market. Any increase in rates means an increase in the price to the consumer and as fish is holding its market at present by extensive propaganda work on the part of the Government and the Association who have pointed out its relative cheapness as compared with meat, a rise in price will divert the consumer to buying meat thus defeating the objects of both the Canada Food Board in saving meat, and the Fisheries Department and the C. F. A. in developing the fishing industry.

We must emphasize the seriousness of this matter to the fish trade and urge all concerned to communicate with either the President or Chairman of the Transportation Committee of the Canadian Fisheries Association in order that their hands might be strengthened in fighting these increases when the matter comes before the Railway Commissioners at Ottawa, January 7th; Toronto, January 13th; Montreal, January 16th.

INTERNATIONAL FISHERIES EXHIBITION.

The Fishing News of Aberdeen, Scotland, suggests the holding of an International Fisheries Exhibition. We reprint herewith part of the suggestion:—

"Such a gathering would bring, as it brought before, all the wise men interested in fishery matters to a great 'round table'; it would give the great manufacturers, engineering, shipbuilding, etc., the opportunity of showing what they are prepared to do in the way of producing the latest in trawler, smack, drifter, or fishing boat, and it would give the industry the added energy and newer spirit which even the fishing industry requires.

But it would do still more. It would focus the attention of our legislators. There would be an opportunity for settling forever many vexed questions, for at such an exhibition there would be papers on every subject of interest to the industry, and these would be given by men whose opinion carried weight."

While we cannot just see how much benefit the North American countries would get from an exhibit of such a broad scope, yet we think that an International Fishing Exhibition confined to the United States, Canada and Newfoundland, and possibly the West Indies, might be productive of great good to our particular fisheries, and would ensure many of the beneficial tendencies described in the British scheme.

The opinions of our readers would be appreciated by the editor.

STEAM TRAWLING OUT OF LUNENBURG.

Three steam trawlers are now being fitted out for next season's bank fishery. These craft are of wood constructed in Shelburne and LaHave, N.S., and are around 150 feet in length. It is reported that other similar craft are building. They will probably engage exclusively in the salt bank fishery. Lunenburg skippers are at present sailing in Boston trawlers to become acquainted with the method of steam trawl fishing.

The Maritime Fish Corporation, Ltd., will exhibit samples of their fish products at the coming Lyons Fair in France.

PISCATORIAL PARAGRAPHS.

"Boston will build no more sailing fishing craft," said a witness at the recent Fish Trust investigation there. "Steam trawlers and power boats are being built in place of the Bank schooner." In a few years the handsome "Banker" with her lofty spars and nested dories will disappear from the fresh fish trade.

Major Hugh Greene is expected back in Canada some time in January.

Leonard Fisheries, Ltd., have a fine new depot at North Sydney, C.B., and will handle a great deal of fresh fish from the prolific fishing grounds of the Gulf and Cape Breton.

On December 9th, fresh hake was sold for \$17.00 a hundred pounds and large cod at \$15.00, at the Boston Fish Pier. And to think that in Canada, fresh hake is hardly saleable in our inland markets!

During 1918, Canadian fish exports were valued at \$33,290,126. The fish imports were valued at \$2,741,161. The exports show a substantial increase in values.

Capt. Chas. Colson, of the Boston fresh fishing schooner "Natalie Hammond," stocked \$85,329 during 1918. The crew shared \$2,425 clear of expenses. There's money in fishing with a high liner. Capt. Colson doesn't need to change jobs with the skipper of an Atlantic greyhound as far as remuneration is concerned.

The British fishermen are agitating for a Minister of Fisheries. We in Canada are more modest in our desires, but we do want a Deputy Minister of Fisheries who will attend to the fisheries and nothing else.

The Lunenburg fishing fleet earned \$3,500,000—nearly a million dollars more than last year. The amount of fish landed was 247,395 quintals and 103 vessels engaged in the fishery. The catch was slightly less than in 1917, but prices were high, averaging \$14.75 per quintal. Nine schooners were sunk by German submarines on the Banks during August and September, 1918.

UTILIZATION OF FISH WASTE.

Ottawa, January 3.

The problem of securing the commercial utilization of the enormous quantities of fish waste on both the Atlantic and the Pacific Coasts has been engaging the attention of the Council for Scientific and Industrial Research for some months past, and, as a result of investigations conducted under the auspices of a committee headed by Dr. R. F. Rutton, of McGill University, indications now point to the creation this year of important new industries for the recovery of fish waste on both coasts.

The data secured by the research council as to the extent of this fish waste would indicate that at present there are annually about 240,000 tons of fish offal and non-marketed fish allowed to go to waste on the Atlantic coast, and about 60,000 tons on the Pacific coast. The fish oil thus wasted is estimated to be worth about six million dollars at current market prices, while the value of the other potential by-products of the fishing industry, such as fertilizer and stock and

poultry foods amounts to hundreds of thousands of dollars more.

In the Canso fishing district of Nova Scotia, for instance, an investigation conducted by the research council shows that the fish waste, if converted into oils would have a marketable value of about \$424,000 per year. Similarly at other centres such as Prince Rupert, Grand River, on the Gaspé Coast, and Clark's Harbor, N.S., this great economic waste has been going on for years, without any enterprise to commercially exploit this waste food material. It is estimated that about fifteen per cent of the fishermen's catch on the Atlantic Coast now consists of non-marketable or non-edible fish, while in the case of trawlers the percentage runs as high as thirty per cent.

In the United States reduction works have been established at several fishing centres where oils, fish meal, fertilizer and various forms of stock foods are manufactured from fish waste. The industry has undoubtedly great possibilities of successful commercial development in Canada provided proper methods are adopted. The research council has urged upon the Reconstruction and Development Committee of the Cabinet the importance of encouraging commercial exploitation of this undeveloped branch of Canada's fishing industry, and plans are now understood to be under way whereby private enterprise will establish plans this year for the conversion of fish waste into its various commercial uses.

A WORD OF ADVICE TO PRODUCERS OF ATLANTIC FISH.

Ottawa, Jan. 4, 1919.

To the Editor of The Canadian Fisherman:

Dear Sir.—Your editorial in the November issue of the "Canadian Fisherman," entitled "Develop our Fisheries," was very timely. You refer to both the overseas trade and also to the domestic requirements. In connection with the idea of stimulating the home market, it is very true that the Canada Food Board has been of very great assistance, both to the producers and also to the retailers. Viewing the situation from the retailers viewpoint, I see one measure at least by which the producer can do considerable to make the selling of Atlantic fish more popular among the retailer.

Speaking from actual experience gained by many years of handling fish, from the Pacific and from the Lakes as well as from the Atlantic, I state emphatically, that the producers of Atlantic fish have imposed certain conditions, which do not conduce so satisfactory understanding, as should be between producer the retailers.

I refer to short weights. Now, at the outset allow me to state that I admit that fresh fish must considerably shrink in transit, and the longer the fish is on the way, the greater the shrinkage.

Again, fresh fish from the Great Lakes, also fresh fish from the Pacific also shrink, but the shippers of lake fish and of Pacific fish, have been generous enough to allow at least to some extent, for this shrinkage, and it is very usual to see shipping tags specially endorsed "allow 3 to 5 pounds per hundred for shrinkage."

Out Atlantic producers, or at least many of them have absolutely refused to make any provision for this shrinkage, which results in inland dealers pay-

ing for what they do not receive and also paying express charges on the same.

My contention is, that if the producers of Atlantic fish are not too independent to cater to the great consuming public in the inland centres of this Dominion they must be as generous in their treatment as the producers of Lake and Pacific fish.

There are so many varieties of exceptionally fresh fish that it is not absolutely necessary for retailers to confine their activities to the sale of any particular variety, but I feel sure they will do business where treatment is fair and sell those goods which allow a reasonable margin of profit.

I know of one firm whose sales of Atlantic fish during the past 10 months increased 37½ per cent over the corresponding period of 1917, while the sales of fresh water fish increased 74 per cent in the same period.

To those retailers who do not weigh their fish when received from the shipper, I would suggest that it will at least be worth while to weigh all your fish.

Wishing the "Canadian Fisherman" and also the Canadian fishermen a Prosperous New Year, I remain,

Yours respectfully,

T. W. A. BINNS.

GOVERNMENT FISH.

When the Ontario Government undertook to supply the people of the Province with fish from the northern lakes it was announced that this undertaking was purely for the public benefit, the fish being supplied to the vendors at cost and the retail price regulated. It transpires, however, that the Government has been exporting fish to New York and realizing a handsome profit on the business. That would be all right if there were a surplus which would not be disposed of in Ontario. But such is not the case. For all the fish that the Government can supply there is a steady demand in this Province—and for more, too.—Hamilton Herald.

EXPERIMENTAL FISH CURING ON THE PACIFIC COAST.

The investigations and experiments in curing fish on the Pacific coast, which the U. S. Bureau of Fisheries undertook through the medium of August H. D. Klie in the latter part of September, have been continued. The experiments in salting the Pacific coast mackerel did not yield promising results as the fish were lacking in flavor and off color as compared to the eastern mackerel. Experiments in canning the fish give more promise.

In the latter part of October Mr. Klie went to Seattle in connection with this work, but he has since been instructed to confer with Mr. O'Malley and the commercial interests concerned in regard to the inspection of Alaska herring. The Scotch-cured Alaska herring packed under the supervision of the Bureau's instructors is of high quality and in demand, but certain other packers, through indifference or ignorance, are placing an inferior pack on the market with the probable result of injuring the reputation of all Alaska herring of that cure. It is hoped that there can be devised a plan for inspecting these fish on arrival in Seattle, thus assuring a standard of quality.



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"Fish is the only readily available substitute for the meats so urgently required for export to the starving millions of friendly allies overseas."

LICENSES ISSUED.

The number of wholesale fish dealers licensed in Canada during the year amounted to 1,733. Quite a number of new concerns went into the wholesale fish business during the year.

TO INCREASE CONSUMPTION OF FISH IN ONTARIO.

Mr. E. O. Sawyer, Jr., Assistant Superintendent of the Fish Section has completed a tour of Ontario towns where he investigated the local fish trade, conferred with dealers and municipal authorities, local food conservation workers and women's organizations. From the information which he obtained, an intensive effort to stimulate the consumption of fish in Ontario will be carried on by the Board's Fish Section.

CODFISH CAMPAIGNS.

A campaign to popularize Atlantic codfish will be conducted in the Province of Quebec during January. During "Codfish Week" in Toronto recently, over 114,000 pounds of fresh and frozen codfish was sold. The Board is arranging to start campaigns in favor of Atlantic and Pacific codfish from coast to coast with the hope of popularizing these prolific and reasonably priced fish.

PACIFIC TRAWLING GOOD BUSINESS.

The market for Pacific flat-fish under the Board's auspices is absorbing the catches of the two trawlers now operating. It is expected that two more trawlers will be put into operation shortly. The Canadian Fish & Cold Storage Co., of Prince Rupert, will probably put the steamer "Geo. E. Foster" into trawling, while the Canadian Fishing Co., Vancouver, will fit out the steamer "Canada" for the work.

TORONTO AND BUFFALO FISH PRICES.

The following comparison between Toronto and Buffalo retail fish prices is interesting and shows that Canadians are favored.

	Toronto. cents.	Buffalo. cents.
Mkt. Cod	11	16-18
St. Cod	17½	20
Haddock	12	14
Salmon Q	20	35
Halibut	30	30
Mackerel	18	30
Trout	19	28
Whites	17-19	28
Pickerell	17-19	28
L. Herring	10	16

CERTIFICATES FOR RETAILERS.

The Board's certificates of commendation for sanitary handling and attractive display of fish in retail stores has already been awarded to some thirty stores. All the recipients have expressed their pleasure at receiving certificates and readily appreciate the value of them in building up their business.

FOOD BOARD CHAIRMAN APPOINTED ON TRADE COMMISSION.

Mr. H. B. Thomson, Chairman of the Canada Food Board has been appointed as one of the three members of the Overseas Trade Commission. Mr. Thomson will retain the Chairmanship of the Canada Food Board until such time as the Board is abolished or merged into the Trade Commission. It is expected that fish will play an important part in the overseas export trade.

FOOD BOARD PROTESTS EXPRESS INCREASES IN FISH RATES.

The Canada Food Board has gone on record as strongly protesting against any increase in the express rates on fish of all kinds from any point of production to consuming centres in Canada.

ATLANTIC FISH FILM CIRCULATING.

Owing to the influenza epidemic, the Food Board's Atlantic fish film has been delayed from circulation. The film has now been booked at the various motion picture houses from Winnipeg east and will be shown early in January.

FOOD BOARD LICENSES FOR 1919.

The Canada Food Board licenses for 1919 will be issued shortly. The fees will be charged upon a new system—the same rate applying to all wholesale businesses. The scale is \$10 for the first \$50,000 and \$10 for each additional \$50,000 of business turnover. The scale of fees for retail fish dealers licenses remains as heretofore. All regulations regarding beef and the use of fish as a substitute are still in effect. An important exception in wholesale fish licenses is that no additional charge for branch is made as fee is based on total turnover for the year.

CAN PRICES LOWER.

New York, Jan. 2.—American Can Co. announces new prices for packers can effective to-day, running 2½ to 6 per cent lower than the prices established July 1st, 1918.

FISH CURING

By J. J. COWIE.

IV.—ALEWIVES.

Curing in Pickle.

First-salting.—The fish should be thoroughly salted into perfectly tight clean receptacles—usually puncheons—immediately after being caught.

One method of salting, which is most common, especially where space is limited, is to fill a tub or basket of one and a half bushels capacity, with fish, and empty it into a puncheon, while as much salt as a snow shovel will hold is scattered evenly amongst the fish as they drop into the cask. As much more salt is then thrown on top of the fish in the cask, and the whole stirred with a pole until fish and salt are well mixed. Each tub or basketful is treated in this way until the puncheon is full.

Another method, which perhaps is the best for the salting of alewives, as well as herring in bulk, is to dump the fish on a clean floor, turn them over with shovels, and as they are being turned over to throw salt amongst them; using the same quantity as in the other method, namely two snow shovels full to a basket of fish. This insures an even distribution of salt.

It would be well to further slightly sprinkle the fish as they are being shovelled into the puncheon.

After the first basketful, or its equivalent, is placed in the puncheon, half a pailful of pickle should be poured in gently in order that the fish may start making pickle quickly.

A cask of the size of an ordinary hogshead filled with alewives, should take at least a sack and a quarter of salt, about 210 lbs., to effectively cure the fish.

Length of Time for Curing.—At the end of 12 or 15 days, according to whether the fish are small or large, the fish may be drawn from the puncheons, and packed into barrels.

A barrel of the same type and capacity (200 lbs.) as that described for split herring in a preceding article, is used for packing and marketing alewives in.

Grading.—While the fish are being drawn from the puncheons to be packed, they should be separated into

two grades and packed separately. The larger grade should consist of fish not less than ten inches, and the smaller grade of fish not less than eight inches as measured from the extremity of the head to where the flesh and tail-fin meet. Both grades should be bright in colour, and free from rust.

Packing.—Before packing is begun, the barrel should be thoroughly rinsed with clean water inside. This tightens it up, and prevents the pickle from leaking away as it forms after the fish are packed.

In packing, the fish should be laid side by side in tiers back up. Each tier should be completed by placing two fish across the heads of those in the tier, and then salted evenly by scattering over it as much salt as a man's two hands placed together will hold. Each successive tier should be packed transversely to the one underneath.

When the barrel is half full, and again when it is full, the fish should be pressed down. To do this properly there should be placed on top of the fish a circular piece of wood on which the packer should stand for two or three seconds. A circular press may be readily made by nailing two barrel heads together, and reducing its circumference sufficiently to allow it to slip easily into the barrel.

The filled barrels should stand for a week, in order that the fish may settle down, after which as many more tiers as are required to completely fill the barrel are added, and the head put in and made tight.

Pickling.—As much pickle as the filled barrel will take should be poured in through a bung hole. This pickle may be either the original pickle taken from the puncheons, provided it is not sour or too weak; or a mixture of half original pickle and half freshly made pickle. The latter is to be preferred.

Smoking of Alewives.—Alewives may be made into kippers and bloaters by exactly the same methods as have been described in the preceding article for the smoking of herring.

ONE ON HUGHIE.

Major Hughie Greene, Director of Fish Supplies for the Overseas Forces, was the victim of a rather odorous incident in England recently. A case of fish had gone bad at one of the camps near London and orders were given for it to be sent to Major Greene's warehouse for examination. The orderly interpreted his instructions as being to forward the box to the Major's "house" and the fish was sent to Hughie's apartments and placed therein by the janitor. Hughie was out of town at the time—it was the month of August—and after reposing in his rooms for three days it did not require any sign-board to direct one to the Fish-monger General's quarters. Hughie admitted that it took a week's airing and a few gallons of disinfectant to remove the odor, while it took months to convince British staff officers and his friends that it was an accident and not a secret penchant for antiques in the fish line.

NEW ENGLAND FISH COMMISSION IN CANADA.

The following members of the Massachusetts Legislature, Senators G. F. Hart and C. D. Brown, Representatives J. Weston Allan, J. D. Bentley, F. A. Manning, A. L. Whitman, C. Bootman, Sergt.-at-Arms J. Beatty, and Clerk of the Commonwealth G. A. Hoyt, visited Canada early in December to investigate fish conditions in inland centres. The delegation visited Toronto first and were given an insight into the operations of the Ontario Government Fisheries by Mr. S. L. Squires and Hon. Finley McDiarmid.

In Montreal, the Commission were the guests of the City Council and the Canadian Fisheries Association represented by President Brittain, and Directors Byrne, Paulhaus, O'Connor and Spooner of the city and Mr. H. B. Short, of Digby, N.S.

Much information regarding the Canadian fish trade was given the Commissioners and Representative Allan stated that he had discovered that Canadians were selling sea fish at lower prices than in Massachusetts.

Report of Canadian Trade Commission to Great Britain, France and Italy, 1916

Canadian Fish Markets Abroad.

Canada produces the following fish:—Cod, pollock, hake, haddock, halibut, eusk, skate, flounders, lobsters, salmon (five kinds, known as sockeye, spring, coho-pinks, dog salmon, or chum), mackerel, herring, alewives and sardines.

Canada also has the Great Lake fish known as white fish trout, lake herring, pickerel, pike.

The value of the fisheries of Canada annually before the war was from \$33,000,000 to \$35,000,000.

The fish chiefly exported from Canada to Europe are either salted and dried (mainly codfish), or canned.

For a number of years quantities of salmon from the Atlantic Coast, and salmon and halibut from the Pacific Coast have been sent to Great Britain in a frozen condition. This trade will develop more in the future, though it is not likely to spread to any great extent to other kinds of fish. Salmon and halibut are comparatively scarce in Europe. There is, however, in Great Britain, some prejudice against frozen fish. Since the war broke out transportation facilities have militated against the development of the frozen fish trade.

At the present time, if transportation facilities and rates were reasonable, it would appear feasible to ship large quantities of fresh fish in frozen condition from the Atlantic Coast to Europe.

There is room for great expansion of trade with Great Britain and other European countries in canned fish. There is every prospect that this form of food will enjoy greater favor in the future. This industry could be developed in Canada to any extent, as the production could keep pace with any demands made upon it. At the present time, canning of fish is largely confined to salmon, lobsters, sardines, and to a small extent, large herrings, cod and haddock. The demand for canned salmon in Great Britain and France is growing rapidly. Up to a year or two ago there was very little inquiry for other than sockeye salmon, but now there is a good demand for cohoes and pinks.

The following is a statement of the exports from Canada to Great Britain, Italy and France for the fiscal year 1915:—

The Commission has noted that every dealer in Canned Goods who gave evidence expressed the strongest desire to give Canada a preference. All were in favor of tins and cases being stamped "Canada."

The imports of all kinds of fish into Great Britain are roughly \$20,000,000 a year. Until recently no attempt was made by Canada to export fish other than canned.

Codfish and Other Dried and Salted Fish.

The outlook for Canada's trade with the United Kingdom is not encouraging. The hundreds of British craft, their ports only a few miles off the fishing grounds, and the cutting off of the enormous German demand for pickled herring, will make it most difficult for Canada to sell dried cod, pickled and smoked herrings in the British market.

Before the war, selected salt cod sold at £16 to £20 per ton, and in 1916 they were £25 to £30 per ton—less than seven cents per pound. Herrings are supplied so cheaply along the Scottish coast that it seems useless for Canada to try the British market.

Even in the fine qualities of boned salt cod in small boxes, we could not hope to do much trade except by a costly advertising campaign. It might be possible to place the boneless cod, small boxes, and the 100-lb. boxes of skinless cod, as described on page 90, but it would be an experiment.

Canada might help to supply cargoes of cod for Britain's export trade to the Mediterranean. These fish cargoes are from 300 to 500 tons. The fish are packed in casks of about 448 lbs., sizes of fish are from 12 to 18 inches long; large sizes are 18 to 30 inches long, packed each size in separate casks.

Digby Chickens.—These are a fine quality Bay of Fundy smoked herring. They are known in Glasgow, Liverpool and a few other places, but are slow sellers. These fish are packed in small boxes of 4 lbs. net, about 30 fish to a box. St. John, N.B., and Halifax, N.S., are the principal points of origin.

Frozen Fish.

As has already been reported by the Canadian Trade Commissioners in England, the demand for Canadian frozen salmon and halibut is steadily increasing. Unfortunately it has not been generally known that this

	Great Britain.	Italy.	France.
Dried Cod, etc.	12,411 cwt.	52,055 cwt.	.....
Green Salted Cod, etc.	13,360 "	.....	.....
Pickled Herring	30,651 bbls.	.....	.....
Smoked "	4,950 lbs.	.....	.....
Canned "	590 cwt.	.....	5,500 cwt.
Lobster, canned	2,815,158 lbs.	.....	1,396,909 lbs.
Salmon, fresh	854,429 "	.....	.....
" canned	25,385,101 "	.....	1,188,816 lbs.
" smoked	1 cwt.	.....	.....
Halibut, fresh frozen	1,940 cwt.	.....	.....

It must not be forgotten that Newfoundland is a great competitor with Canada, in the supplying of European markets with dried fish.

class of Canadian fish is procurable during the winter months. This is due chiefly to the fact that English dealers have sold the Canadian fish as "English,"

with the result that the consumers' demand ceases as soon as the English fresh fish season is over. Certain difficulties stand in the way of launching a general advertising campaign in the interests of Canadian fish. Some means, however, would appear to be necessary to secure to Canadian producers the market which the taste of the British public naturally affords.

Vancouver and Prince Rupert ship halibut in 300 lb. cases and salmon in 260 lb. cases.

Dealers in Hull, Glasgow, and other cities speak highly of the quality and style of packing of Canadian salmon.

An inspection custom prevails which presses unduly on imports of frozen salmon into the United Kingdom. The Board of Fisheries decreed that all cases of Canadian fresh salmon landing in Britain between September 1st and February 1st must be opened and examined by the officers of the Fishmongers' Board. An officer must go to Glasgow or any entry port, open the cases, examine the fish and place a seal on each individual fish, as a proof that it is of Canadian origin. The Glasgow Fish Dealers' Association complained of cost, etc., of this inspection, as follows:—

"Apart from the financial cost, the handling of frozen fish while in cold storage in the way of opening the boxes, unpacking the fish for sealing, and again wrapping up and packing the fish, tends to a rapid deterioration of the goods, and on this account alone is open to grave objection and should be avoided if at all possible."

The London Fisheries Board replied May 25th, 1916:

"The suggestion made by the Glasgow Wholesale Fish Dealers' Association, that the packages and not each individual fish be sealed, would not protect the retail fishmonger when the packages are broken at the market and the fish sold separately. A whole case of fish is very seldom bought of one fishmonger and in practice he prefers to have the proof of origin and the protection afforded by the seal affixed to each fish.

"These conditions do not apply to fish entered for re-exportation to the Continent. It is then sufficient if the case itself be sealed.

"The opening of the cases and the separate sealing of each fish necessarily involves some addition to working expenses, but the total cost, including the low charge for sealing of one penny per fish, cannot appreciably affect the profits of the consignment, nor is it to be anticipated that the handling of the fish would affect its quality or lower its market value."

It has been suggested that fish packers in Canada have a small metal shield $\frac{1}{2}$ inch long, marked "Canada" attached to each salmon when packed. These shields, made in 50,000 lots, would cost very little. This would save the penny paid in the United Kingdom, and would avoid the opening of cases in Britain.

The following extract from a letter received by this Commission is of interest:—

"We think the suggestion made, namely, that a metal disc might be affixed to the salmon by the packer in British Columbia, might meet all the needs of the case, and we trust you will be able to have the matter put on a satisfactory footing with the British authorities so that these sealing restrictions may be done away with."

The Commission thinks it wise to remove all restrictions that are vexatious, and hopes the British Colum-

bia Government will consider the suggestion made in the above letter.

There is a great future for the trade in canned and fresh salmon with Great Britain, France and Italy, and every effort should be made to facilitate trade.

While the Commission was in London, the question of supplying frozen fish to the British Army was under consideration.

One of the Commissioners, who is well informed in the subject, took steps to help remove the objection of the military medical authorities.

It is gratifying to note that since the return of the Commission, a large contract has been placed by the British War Office for a supply of Canadian frozen fish. It is to be hoped that a very large trade may be developed after the war in Great Britain and elsewhere.

Canned Fish.

English dealers expressed a definite favorable opinion as to the good quality of Canadian canned salmon. One firm, which may be taken as representative of the English trade, stated that they "only buy Canadian packed salmon and have had no complaints." . . . "We generally buy fifty per cent sockeye, fifty per cent pinks."

Sardines.—The same firm said "We cannot sell the kind in mustard. We buy the other kind in oil." . . . "Must not be over four inches long, and have key tin." This firm complained that "some Eastern Canadian kinds of sardines are inferior in quality and style." Another firm said "We prefer the key sardines. Canadian fish are not small enough. They are not clean and the oil is poor. . . We prefer 8 oz. tins, not 16 oz."

Canadian exporters of sardines should get full information on the legal definition of "sardines." There is a good market, as the imports are \$3,500,000 per annum, the countries of origin being Norway, France and Portugal. Much money is spent on advertising, and competition is keen.

Canned Herring.—A dealer in Birmingham said that his city could distribute 30,000 to 40,000 cases per annum. The tins should be oval, the fish six to seven inches long. This dealer now buys in Norway. The cases should be 100 tins of half-pound size.

Canned Lobsters.—A dealer in Liverpool, who is prominent in the trade, stated that he "buys lobsters from Prince Edward Island, one-quarter pound, one-half pound, and a few three-quarter pound. The quality does not improve and is not equal to the Nova Scotian." He complained about the "blue shade" in Prince Edward Island lobsters, claiming to have had some in late arrivals. From him and others the Commission learned that large quantities of canned lobsters were imported from Eastern Canada and reshipped to France. One Liverpool firm stated that "lobsters are all right, no blackness in tins." Japanese crabs, neatly canned, are selling freely in England. They are cheaper than Canadian lobsters. It should be especially noted that all tins containing fish should bear the word "Canada."

Fish Oil.

Notwithstanding her large fishing fleet, Canada is behind Norway, Newfoundland and even Japan in supplying the United Kingdom with fish oil. Since 1913 Norway and Japan have very much increased their exports of fish oil to the United Kingdom, but Canadian exports have decreased.

The Board of Trade returns indicate that large quantities of fish oils are received from Newfoundland than

from Canada, due probably to the former's exports of seal oil.

Several buyers of cod liver oil were recently introduced to a firm in Nova Scotia. Prior to the war supplies were obtained largely from Norway, but a great shortage has accompanied the conditions of war. Newfoundland has exported large quantities during the last eighteen months to the United States and Great Britain. It is a trade worth the attention of Canadian producers, but it would have to be organized on a proper basis so as to ensure a product acceptable to the medical profession.

FRENCH MARKETS.

Lack of ocean transportation facilities has doubtless caused a decrease in Canada's exports of fish to France. There have been in the past few years some fluctuations which demand attention. The decrease in our fresh salmon sales to France since 1911 has been considerable. During 1914 our sales of canned lobsters to the United Kingdom increased slightly. Fresh salmon exports from Canada to the United Kingdom increased 60% over 1913 exports, and those of canned salmon were more than double what they were in 1911, 1912 and 1913. This proves that the United Kingdom importers were getting the trade that Canada was losing in France.

Cod Fish.—As shown by trade returns, Canada does not sell any cod fish to France. The supply of this fish comes almost entirely from the French fishing fleet, one-third of which seeks the shores of Iceland, and the other two-thirds the Newfoundland and St. Pierre shores.

Boneless Fish.—Eastern Canada has, during the last twenty years, developed an industry in boneless codfish for which we might find a market in France. This commodity is packed in small wooden boxes.

Canadian fish dealers, in order to secure the French trade, should pack this boned codfish, and other boned fish, in small wooden boxes of 1 kilo (equal to 2.20 lbs.) 3 kilos, and 5 kilos.

The Commission found that dealers in France apparently know nothing about these clean white boned codfish.

Skinless Codfish.—These are packed in wooden cases of 100 lbs. net. The fish are well cured by the usual pickle curing, and sun-dried afterwards. The coarse, dark skin is removed from the napes and the fish look bright and clean, lying flat in the wide boxes. If these fish were cured a little more dry, and shipped by quick steamers, they should find a market in France from October to April.

Haddock, Hake, Pollock.—If seeking a market for these fish in France, Canadian packers should not try to sell them as "Codfish," but as a second quality fish. They should be boned and put up in boxes of one kilo, three kilos and five kilos. On all sizes of boxes the word "Canada" should be prominent. The boxes must not be marked "Codfish" but "Pure Fish." The weight and packer's name should be carefully stated. Samples should be sent first to responsible agents in the larger cities.

Skate, Flounders.—These fish are to be found for sale in French markets and are often served in the higher class restaurants, etc.

Pickled Herring.—The market for Canadian Pickled Herring in France is not likely to be large. France

does not buy fish to any great extent, and further, large quantities are obtainable in the English Channel and the North Sea. It might be, however, that if Canadian dealers would pack good Eastern Number 1 Herring in sound barrels, bound with iron hoops, and would forward samples to French agents, a market might be developed. One of the difficulties so far has been that the Canadian barrels and half-barrels made from spruce wood have not been proof against leakage.

Kipperd Herring in tins might also be sold.

Smoked Fish.—We doubt if fish that are smoked in the ordinary way could stand the summer weather of France, but for shipment in the months of November and December it is possible that smoked fish, kippers, bloaters, etc., and even smoked salmon, might find a sale in the French market.

Smoked Herring.—Eastern Canada has been putting up for many years large quantities of small herring in thin board boxes. These fish count from 20 to 25 to the box, and weigh net about one kilo—2.20 lbs. They are dried hard, and in ordinary climates will keep for three to six months. We would suggest that dealers place these on the French market. October or November would be a good time for shipment. The small boxes of one kilo might sell; the larger ones of 10 kilos would be difficult of sale. They should be smoked fairly dry and hard, so as to require very little cooking. Boxes should be stamped "Canada"; the letters "Canada" about one inch long. It is best to have the packer's name on each box.

Salmon, Lobsters.—France has always bought enormous quantities of canned lobsters, and while canned salmon are sold only in very limited quantities, the sale has greatly developed of late, the article having found favor in the taste of the consuming public, since meats and other commodities have become so dear.

Lobsters sell mainly in flats $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 lb. tins. Before the war a good market was found for lobsters in Russia, Belgium and Germany, which countries bought mainly the choicest grades. The better grades come from the south shore of Nova Scotia and also from Newfoundland, but lobsters of Newfoundland origin do not interest the French market. That colony has no special treaty with France, therefore the lobsters of Newfoundland origin pay the maximum duty while Canadian fish enter at the minimum duty.

It is claimed that these south shore Nova Scotia lobsters are a little larger than those coming from Prince Edward Island, and the New Brunswick coast on the Gulf of St. Lawrence. The tin plate should be of the best quality and well coated, so as to prevent its being tarnished by sulphate of iron, or so called "smut" which sometimes develops within the can.

Agents in France state that all cases of lobsters and salmon must be marked in four-inch letters "Canada." Each can of tinned fish must also be stamped "Canada" on the cover of each tin, letters to be not less than 7 millimetres (of $\frac{1}{4}$ inch) long. This stamping of "Canada" on tins is required for fish only and not for lobsters, the latter being considered as "Crustaceae" to which the stamping law does not apply.

Cases are sometimes broken. It is advisable to have them bound with iron stripping rather than nails. Some dealers use a machine which draws the iron stripping carefully over the box, setting it down into the wood. This makes a perfect box and prevents pilfering and breaking.

Dealers complain that sometimes certain lines of

lobsters contain too much liquid. Lobsters should be packed, whole tail at bottom of tin, whole claws on the top, and some of the small meat in the centre.

The duty on Canadian lobster and salmon is 25 francs per 100 kilos, if the goods come direct to France. If they come to France via an English or other European port, the duty is 28.60 francs per 100 kilos. In 1915 and 1916 large quantities of salmon and lobster were shipped via New York to France. The Government, owing to the suspension of direct steamship services between the Dominion and the French ports, does not charge the duty at the rate of Frs. 28.60 via New York, as the law is construed to apply only to a second European port. But the shipment via New York being contrary to the provisions of the French tariff law regarding direct imports and minimum tariff a special permit has to be obtained by the French importer for each individual consignment. In shipping via New York, dealers have to supply, besides the usual certificate of Canadian origin, legalized and vised by the French Consul at the point of shipment in Canada, a special certificate made out at New York, attesting that the goods, as set out with full particulars as to marks, quantities, name of steamer, etc., have been transhipped at New York "in transit" under Customs' supervision and without having sustained any other handling at New York. This declaration has to be legalized by the French Consul at New York. The certificates must also indicate the name of the shipper, and of the buyer or consignee in France.

Cases of 48 1 lb. tins of salmon or lobsters weigh about 32 kilos gross, or 28 kilos net, including weight of tins.

The paper lining of tins of lobsters is most essential. It should be good, pure, vegetable parchment paper, so as to prevent acid from affecting the tins.

Except in two towns in France, there is an "octroi" duty in each city. This "octroi" on fish in Paris is nearly as much as the original duty of 25 francs per 100 kilos. As all these duties are specific and not "ad valorem" the tendency is for buyers in France to take the best goods and not the poor stock, as the duty is the same on each.

The dealers in Paris who sell out to the small stores make many losses by "swells" and by "black meat." A wholesaler in France has to guarantee the quality of his canned goods, sometimes from July to September, when he receives them, until the following February or March. The importance, therefore, of having the goods put up in the best way possible as to paper lining, quality, strength and condition of boxes, etc., is obvious.

All dealers prefer buying c. i. f. Havre or Bordeaux. Of the five kinds of salmon, not many of the high grade "Sockeye" have been used since the war, as the original cost is too high. "Cohoos" and "Pinks" are the largest sellers. Just now, on account of the war, the "Pinks" are selling well. It is thought that when peace is arranged, a large demand will spring up for "Cohoos." Dealers report that Canadian salmon are usually good stock. The half and one lb. "Pinks" sell the best. There is considerable demand for "Cohoos" in ordinary years. A Paris dealer bought in July, 1916, 10,000 cases "Pinks" and 5,000 cases of "Cohoos" for autumn delivery.

Canadian dealers must remember that there are no salmon at all canned in France, and with ordinary care and consideration for French needs, trade should rapidly increase.

The French trade prefers a firm salmon; any that are at all soft tend to lower Canada's reputation among the dealers in canned goods.

Sardines, Sprats.—Sardines are, of course, canned in France, but best quality only, while large quantities of sardines of medium and cheap grades come from Spain and Portugal. Sprats come from Norway, the latter being slightly smoked and going by the name of "Brislings."

If the Canadian canners desire to offer true sardines, they should print on the label the words: "Sardines, Poissons a l'Huile." If the fish are not true sardines, but some other kind of fish, then they should be marked simply "Poissons a l'Huile"; omitting the word "Sardines." Otherwise, the goods will be stopped by the Customs authorities and heavy fines may be imposed on the importers for fraudulent trade description. All canned sardines, sprats or fish in oil must be stamped in the lids or bottoms of cans in at least 4 millimeter characters: "Importe due Canada."

The "key" sardine tin is much liked in France, especially that kind of which key rolls up the top or cover of the box and leaves the fish completely exposed. The key needs to be laid in a groove on the tin, and then it will come in with the weight and not pay a special duty.

Smoked Salmon.—There is a special high grade, sliced, which sells at a good price in ¼ and ½ lb. tins. These must be put up in first class olive oil. They are also sold in small tinplate drums that will hold about 3 kilos (6 3/5 lbs.) It is perhaps not advisable to make consignments of smoked salmon, but it would be worth while to send samples to responsible agents. Shippers of canned goods should be careful to familiarize themselves with the French laws concerning duties, stamping tins, certificates of origin, etc., before putting their goods on the French market. For this purpose we append extracts from the law:

"Stamping Regulations of Canned Goods. The Act July 11th, 1906, prescribes that all foreign canned sardines, vegetables and plums coming into France, should bear the name of their country of origin stamped or embossed on the cover or bottom of the tin in letters of at least 4 m/m long."

A bill in amendment of above was adopted by the Chamber of Deputies and the Senate on May 13th, 1913. This amendment makes applicable to all foreign canned fish coming into France, the stipulations of the Act of July, 1906. During the discussion, it was pointed out that canned molluscs or crustaceans (such as oysters, lobsters, langoustes and crabs) would not be subject to the terms of the Act, as they were not fish and were classified differently in the French Customs tariff.

At the request of the Dominion Government, Canadian canned salmon was exempted from the application of the Act until June 29th, 1914. Canned lobsters and other crustaceans have never come under the operation of the Act.

FRENCH TARIFF ON FISH.

		General	Minimum
		per	per
Section—		100 kilos.	100 kilos.
No. —	Fresh Salmon Trout.	40 fes.	25 fes.
45 —	Pike, Carp, Eel	12 fes.	8 fes.
No. —	Dried Cod	60 fes.	48 fes.
46 —	Salted or Smoked Herring.	20 fes.	15 fes.

No. — Canned, Pickled or other-
47 — wise prepared 50 fcs. 25 fcs.

No. — Lobsters, fresh 40 fcs. 15 fcs.
49 — Lobsters 40 fcs. 25 fcs.

Canada has the benefit of the minimum tariff. The Commission recommends that the French Government be asked to make the duty on canned lobsters the same as that on fresh lobsters.

ITALIAN MARKET.

Codfish constitutes the bulk of Italy's fish imports of about seven million dollars per annum. Norway is the principal source of supply, furnishing over one-third of the total. Canada sends somewhat more than one-quarter. Denmark, Great Britain, France and the United States make up the balance.

Canada has an excellent chance to compete with Norway, since while the shortness of the ocean haul is in Norway's favor, the transatlantic cod keeps six or eight months, whereas the Norwegian cod is said to deteriorate rapidly. Again, while it may be that a part of the imports of cod credited to Canada originate in Newfoundland, the Italian market does not favor the dark Newfoundland pack, but prefers the Copenhagen style, which is much like Eastern Canadian pickle-cured medium, cod, i.e., pickle-cured, then pressed and dried slightly.

The dealers in Northern Italy are accustomed to buy haddock and cod, soft-cured, in bundles of 100 kilos, wrapped in sacking and firmly corded. The fish are 14-16 inches long. The southern market, as represented by Naples, prefers the stiff, board-like curing.

Canada's exports of fish to Italy may be developed to include other varieties than cod. Britain brings in many cargoes of Western Hemisphere fish, which are at once shipped out to Italy. Britain sent Italy in 1913 some 5,000 tons of dried herring, valued at nearly \$2,300,000.

Given direct steamship communication with Italian ports, such as Naples or Genoa, Canada's exports should rapidly increase. This would be the case particularly if other Mediterranean ports are visited. Spain and Portugal both import considerable quantities of codfish, the former bringing in, in 1913, 54,000 tons.

OTTAWA END OF CANADIAN TRADE MISSION IN LONDON ORGANIZED.

To co-operate in Canada with the Canadian Trade Mission in London, which was created with a view to securing orders for Canadian products for reconstruction purposes in the devastated areas of Europe, a body designated as the "Canadian Trade Commission" has been created.

The commission consists of three members: Sir Charles Gordon, of Montreal; Mr. Charles B. McNaught, of Toronto; and Mr. H. B. Thompson, of Victoria, B.C. Sir Chas. Gordon was formerly vice-chairman, Imperial Munitions Board with an office in New York; C. B. McNaught is chairman, Canadian War Trade Board, and H. B. Thomson, is chairman, Canada Food Board.

NOTES ON SEA FISHING RESULTS FOR NOVEMBER.

Rough weather greatly interrupted fishing operations on the Atlantic during November. A heavy easterly gale about the 14th wrecked or damaged many boats, wharves, and much fishing gear, especially in the eastern districts of Nova Scotia.

The quantity of cod, haddock, hake, and pollock landed was 87,311 cwts., against 100,694 cwts. for November, 1917. The catch of cod was 328 cwts. greater, but that of haddock, hake, and pollock was 13,711 cwts. less. Most of the shortage was in haddock.

There was an increase of over 12,000 cwts. in the herring catch, and a similar increase in the mackerel catch all over the Atlantic coast. The sardine fishery in the Bay of Fundy was exceptionally good, and amounted to 65,025 barrels for the month, against 23,965 barrels for the same month last year.

The new lobster fishing season opened in Charlotte and St. John counties, New Brunswick, on the 15th of the month. The catch amounted to 1,268 cwts., against 1,080 for the same period in the preceding year.

Scallops to the extent of 2,000 barrels were taken in the Chester bay district of Nova Scotia, against 1,000 barrels for November, 1917.

The catch of oysters amounted to 3,979 barrels, against 4,311 barrels. There was an increase of 269 barrels in New Brunswick, but a decrease of 601 in Nova Scotia and Prince Edward Island.

Stormy weather on the Pacific, and the effects of influenza amongst the crews caused most of the halibut boats to be tied up at Prince Rupert during the month. Consequently, the British Columbia halibut catch only amounted to 7,084 cwts. against 13,030 for November last year.

The herring catch in British Columbia was about 60,000 cwts. short, while the catches of salmon and black cod was somewhat less. Of flat fish there was an increase amounting to 2,771 cwts.

The total catch of sea fish in the whole of Canada during the month realized a value of \$2,284,163 at the point of landing. In November last year the value was \$2,145,760.

One man on the coast of Victoria county, N. S., and fifteen men on the west coast of Vancouver Island lost their lives during the month, in connection with the fisheries.

BRITISH MINISTRY OF FOOD CANNED SALMON PRICES.

The prices fixed by the British Ministry of Food for the British Columbia salmon pack commandeered by them is as follows:

	Talls.	Flats.	Half flats.	Ovals.	Half flats.
Sockeyes	\$14.50	\$15.00	\$16.00	\$16.00	\$17.50
Red Springs . .	13.00	13.50	14.00	14.00	....
Cohoos	11.50	12.00	13.00	....	....
Pinks	8.00	8.25	9.50	....	....

The above prices are for labeled cans. Unlabelled cans are subject to a reduction of 15 cents per case for one pound and twenty cents for half pound cans. All prices are subject to the usual trade discount of 2½ per cent and one half of one per cent in lieu of the usual ten per cent examination.

Sea Fisheries of Europe---Norway

No European country has succeeded so well as Norway in developing its sea fisheries in the last generation. It has many natural advantages, the coast line is of great extent, measuring, without taking account of fjords, bays, indentations or islands, about 1,600 miles, from the Russian frontier in the north to the Swedish frontier in the south; it extends through nearly 14 degrees of latitude and 27 degrees of longitude; it is everywhere, except in the south, washed by the warm water of the "Gulf Stream" (the Norwegian Branch of the Atlantic Drift) which pours northwards and eastwards along its coast, carrying some of the warmth of the tropics into the Arctic regions, so that no part of the sea is frozen in winter; the coast is penetrated by innumerable fjords and girdled with a chain of islands, large and small ("skjaergaard") and is washed in its northern part by the Arctic Ocean, in the south by the North Sea and the Skaggerack, and in the west by the North Atlantic. The natural conditions are thus very favourable for the development of fisheries. Moreover, the land is comparatively sterile, and a large proportion of the population has been compelled by the force of stern necessity to seek their livelihood in the sea, either throughout the year, or, more commonly, only during part of it, the majority following agricultural pursuits as peasant-farmers during the rest of the time.

One might expect from the natural features and the economic conditions to find the fisheries rather different from those in the countries farther south, and such is the case. There is very little deep-sea fishing, and but a small steam fleet; there is no trawling, except for a deep-water prawn; there is no great drift-net fishing, though the herring fisheries are of much importance. Nevertheless, and notwithstanding the small population, the Norwegian catch is the second largest in Europe (excluding the Mediterranean) and third in value. The Bulletin Statistique gives the following as the catch in thousands of cwts. and thousands of pounds:

	1907.	1908.	1909.	1910.	1911.	1912.
Cwts.	9,162	9,907	12,030	11,450	13,641	16,019
£'s	2,430	2,258	2,429	2,758	3,133	3,096

In the period the quantity increased by 74.8 per cent, and the value by 27.4 per cent, the increase in quantity being more than in any other country, except Russia, where the figures are undoubtedly wrong. The development of the Norwegian fisheries has been due

to (1) thorough and detailed assistance, directly and indirectly, by the State; (2) the application of scientific and technical knowledge and a close study of foreign fisheries; (3) the introduction and general use of the internal-combustion engine in the fishing boats—specially adapted for the nature of the Norwegian fisheries; (4) the introduction of new, and the improvement of old, methods of cure, notably the creation of the "sardine" industry, and (5) the exceptional energy and capacity of the Director of Fisheries, Dr. Johann Hjort, who is a scientific man with a business head. The chief fisheries are (1) those for cod and members of the cod family; (2) those for herring, mackerel and sprats; (3) a "bank" fishery of much less importance; (4) whaling and sealing; (5) lately developed, a fishery, especially for herrings at Iceland. The two first are of overwhelming importance; in 1915, the cod fisheries provided 50.01 per cent of the total value, the herring, mackerel and sprat fisheries 44.88 per cent (herrings, 35.67 per cent), and all the others 5.11 per cent.

The Fisheries as a Whole.

The total number of fishermen engaged in 1915 was 88,298, of which 21,349 were fishermen pure and simple, 34,370 pursued fishing as their chief occupation, and 32,579 as a subsidiary occupation; in addition 17,538 persons were employed in the curing and treatment of the fish, 6,609 in the tinning, fish-oil and guano factories, and 1,930 in the whaling industry. The men, of course, engage in different fisheries at different seasons, and the following figures show the number so employed for a number of years:

Year.	Cod Fisheries.	Fat Herring.	Spring Herring.	Mackerel.
1876.....	62,757	48,831	?	3,436
1880.....	80,441	35,130	?	3,719
1890.....	89,283	29,804	?	3,335
1900.....	82,098	20,705	?	2,741
1905.....	83,286	8,492	?	9,516
1910.....	88,144	27,024	22,560	5,400
1913.....	99,659	17,693	17,015	3,073
1915.....	92,865	20,870	11,955	4,489

The fishing fleet is large in numbers, but few of the vessels are of any size, being adapted for the fjord fishings and those within the "skjaergaard," or island belt. The following shows the figures for some years:—

Year.	Decked Vessels				Open Boats.				Total.	Grand T'l.
	Steamers.	Motor.	Sail.	Total.	Motor.	Dories.	Others.	Total.		
1906.....	176	647	3,753	4,576	....	....	....	....	....	....
1907.....	..	....	....	....	....	....	....	....	....	....
1908.....	195	1,483	3,861	5,539	153	5,484	....	....	....	....
1909.....	180	1,736	4,255	6,171	238	5,883	44,399	50,520	56,691	56,691
1910.....	183	2,407	3,779	6,369	505	7,066	45,158	52,729	59,098	59,098
1911.....	182	3,296	3,033	6,511	872	7,711	50,082	58,665	65,176	65,176
1912.....	184	3,925	2,612	6,721	1,451	7,339	49,195	56,985	63,706	63,706
1913.....	205	4,405	2,417	7,027	2,092	7,390	51,981	61,363	68,390	68,390
1914.....	210	4,937	1,986	7,133	2,471	8,238	54,683	65,392	72,525	72,525
1915.....	206	5,475	1,228	6,909	2,871	8,116	41,328	52,315	59,224	59,224

The table shows the common changes which have taken place in most European fisheries, but the sailing boats have been replaced by motor-boats, and not by steamers. The number of motor-boats in 1908 was 1,636, while in 1915 they numbered 8,346, and they continue to increase. The steamers are small, mostly under 100 feet, of steel or wood, principally engaged in the "bank" fishery or at Iceland, usually ekeing out a more or less precarious existence by towing vessels or fishing boats, or carrying cargoes, as herrings to Stettin. They belong mostly to fishermen—and,

indeed companies are scarce in Norway. The fisheries are individualistic. The value of the boats rose from £1,507,000 in 1908 to £2,915,000 in 1915; in the latter year the value of the gear was £1,430,000, while the value of the curing houses, tinning and other factories, etc., was £1,467,000, the capital sunk thus totaling about £5,812,000.

The aggregate yield of the fisheries is shown in the following table, quantities in thousands of metric tons (of 1,000 kilogrammes) and values in thousands of kroner (pre-war exchange equal to 18 kr. to £1 stg.):

	Norwegian Waters.		Foreign Waters.		Total.	Value of Whale and Seal Catch.		Total Value.
	Tons.	Kr.	Tons.	Kr.		Kr.	Kr.	
1906	328,550	34,872	24,919	2,663	353,466	37,537	4,833	42,368
1910	496,750	43,577	18,771	2,172	515,521	45,749	17,915	63,664
1913	562,757	50,959	19,472	2,809	582,229	53,768	37,386	91,154
1914	577,124	59,272	21,208	2,577	598,588	61,849	36,168	98,017
1915	544,720	84,878	12,774	2,416	557,494	87,294	31,066	118,360

The "foreign" waters comprise Iceland, the Faroes and the North Sea. The aggregate value advanced from £2,354,000 to £5,064,000 in 1913 (before the war) and to £6,576,000 in 1915. In 1915, and partly in 1914 values were much higher owing to the war-demand in Germany; this influence was still greater in 1916, for the official estimate of the total value of the fish landed in that year was no less than 180,000,000 kroner, or £10,000,000. Last year, however, and still more in the present year, there has been a sad decline, owing partly to the measures taken to restrict exportation to Germany, and partly to the risks at sea.

The Cod Fisheries.

This fishery is carried on mainly in the northern part of the coast, north of about 67 degrees latitude in the early months of the year—in the Arctic winter, tempered by the Gulf Stream. Two fisheries are distinguished, that for full-sized spawning fish ("skrei") and that for smaller cod ("torsk"). The fishery for "skrei" goes on from about the 1st of January to the end of April, from the neighbourhood of Bergen, increasing in importance as one goes north, and being chiefly concentrated at the Lofoten Isles; but there is an important "skrei" fishing on the Romsdal banks, which in recent years almost rivals the Lofoten fishery.

The latter is a very old fishing, mentioned in the Sagas and later exploited by the Hansards, who had a station at Bergen (still preserved). It is frequented by fishermen from almost all parts of Norway, accompanied by various vessels and steamers to minister to their needs and carry away the produce. The methods used are long-lines (chiefly) set-nets, and hand-lines; the lines are tending to displace the nets. The fishery for the smaller cod (torsk) is chiefly at Finmarken, the most northern province. It is a spring fishing, from about the end of April to the end of June, and is called the "lodde" fishery from the capelan bait ("rodde") used.

There is also a "skrei" fishery at Finmarken, from the New Year till the opening of the "lodde" fishing, and also one in summer and autumn for "torsk." The fish are almost all dried for export, either as stock fish ("torfisk") for which no salt is used—and they may be split but are generally round—and split-fish ("klipfisk"), which are split and salted. The heads and offal are utilised at the fish-meal and guano factories. Besides the fish, the livers and roes are important, the former for oil and the latter for bait in the French and Spanish sardine fishing. Here are the figures for all Norway of the "skrei" fishery:—

Year.	Tons.	No. of Fish (1,000's)	Livers.	Roe.	Total Value	Value per 100
			Hectolitres.		(1,000 kr.)	ungutted fish.
1906	126,500	46,848	107,013	46,580	16,426	35.06 Kr.
1910	149,200	55,336	120,911	46,900	19,203	34.70
1913	204,600	75,794	144,459	35,608	25,677	33.88
1914	218,227	79,844	144,527	65,481	31,775	39.80
1915	183,075	67,481	134,838	55,380	33,079	49.02

The influence of the war is seen in the diminished catch in 1915 and the higher values; since then the fishing has materially declined and it reached its lowest point in history this year (1918). Norwegian dried cod are, or were, sent all over the world, mainly to the Catholic Latin peoples—Spain, Portugal, Italy, South America, etc. In 1915 the export of klipfish was 43,552 tons and of stockfish 16,374 tons, the value being £2,900,000. The other fish of the codfish family are the following, showing quantities, in tons, for 1915: Coalfish, 24,304; haddock, 10,074; torsk (Brosme) 4,598; ling, 2,945; pollack, 100. These are also largely dried, but large quantities (as well as of cod) are ex-

ported in ice, or salted in barrels, or in bulk, much going to north Russia, and, in the early years of the war, to Germany.

The Herring Fisheries.

There are four chief herring fisheries (1) for fat herrings ("fetsild"), carried on in summer and autumn close inshore from the neighbourhood of Aalesund to Finmarken, drift-nets ("garn"), often fixed as set-nets, being used and also seines ("not") hauled ashore; (2) for spring herring ("vaarsild"), from January or February to March or April, between Lindesnaes and Stat, on the southwest coast; it is not so close inshore and drift-nets are mostly used; (3) for

the "great" herring ("storsild"), from November to February, from half-a-mile to five or even ten miles offshore, principally off the Romsdal district, (4) for small herrings ("smaasild") along the whole coast throughout the year, but most pronounced in autumn and on the northern stretch of the west coast. To these may be added the fishery for North Sea herring and for herring at Iceland. The following shows the total catch and value of the herrings: 1906, 1,504,000 hectolitres, valued at 10,124,000 kr.; 1910, 2,594,000 hl., valued at 11,678,000 kr.; 1913, 2,899,388 hl., valued at 13,377,000 kr.; 1915, 2,820,571 hl., valued at 31,118,000 kr. In 1915 the figures for the various classes were as follows:—Spring, 1,091,321 hl., and 6,915,000 kr.; "great," 742,070 hl., and 7,173,000 kr.; "fat," 418,211 hl. and 10,464,000 kr.; small, 447,554 hl. and 4,499,000 kr.; North Sea, 6,050 hl. and 151,750 kr.; Iceland, 115,365 hl. and 1,914,786 kr. The herrings are exported in ice, to Germany and Great Britain especially, also pickled, to Germany and Sweden, etc.; a large quantity, particularly of the small herrings are tinned, and often much of the "fat" herrings go to the herring-oil and guano factories. In 1915 the quantity of fresh herrings exported was 58,047 tons, valued at 9,288,000 kr., Germany getting 23,087 tons and Great Britain 28,760 tons; the quantity of salted was 165,450 tons, valued at 57,820,000 kr., Germany getting 79,895 tons.

The Tinning ("Hermetic") Industry.

This has grown to be one of the principal industries in Norway, and great credit is due to the Norwegians for their enterprise and skill in turning to such valuable account the smallest fish in their waters, the sprat or "brisling." There are now about 200 tinning factories in Norway, mostly at Stavanger, and so successful has the industry become that the supplies of sprats are no longer sufficient, and have to be supplemented by quantities of very small herrings, as in the New Brunswick and Maine industries. The fish lacks the particular flavour of the true sardine, which is absent from Norwegian waters, but it is usually smoked and has thus a flavour of its own; the "sardines" are packed in olive oil and cottonseed oil. The sprat is fished for in the fjords and coastal waters on the southwest coast, from about Aalesund south, with fine-meshed nets of many types (including purse-seines), from May to the following February. The quantity of "sardines" exported in 1915 was 17,659 tons, valued at 22,074,000 kroner; most go to the United States, Great Britain and British Overseas Possessions. Other fish are tinned, especially herrings, and notably kippers, of which 2,921 tons, valued at 2,629,000 kr. were exported in 1915.

Norway is a great fish-exporting country, the quantity, including oils, fish-meals and guano, etc., exported in 1915 being 465,708 tons, valued at no less than £16,317,000, a figure swollen through the German war demand; in 1913 the value was £7,860,000. A word must be said about the development of the export business in fresh (iced) fish, especially herrings to Germany and Great Britain. Great care and attention have been given to this, by subsidised refrigerator steamers and railway cars, and in other ways. The following figures are impressive, showing the exports to Germany and Great Britain:

	Fresh Herrings.		Fresh Fish.	
	Germany. Tons.	Great Britain. Tons.	Germany. Tons.	Great Britain. Tons.
1890.....	107	5,674	137	397
1900.....	1,712	9,954	619	609
1910.....	39,346	42,922	2,008	38
1913.....	31,673	43,956	2,746	93
1915.....	23,087	28,760	10,112	621

Anyone wishful of studying up-to-date methods in fishery industries and organizations ought not to neglect Norway!

FISHERIES OF THE NORTH SEA.

There is a noticeable dearth of literature in book form on the commercial fisheries of the world. Writings on the subject are numerous, but mostly in government blue books, and small pamphlets are they found, and usually in technical language not understood by the layman. "The Fisheries of the North Sea," by Neal Green, is a welcome addition to piscatorial bibliography. The writer shows a distinct grasp of the subject and an unusual knowledge of the fisheries of Scandinavia, France, Germany, Russia, Canada and the United States. It is a little book, but its chapters are well balanced and show evidences of some clear thinking. Mr. Green gives a light and comprehensive sketch of the history and the natural advantages of the North Sea fisheries, and, while dealing particularly with that prolific fish-producing area, he introduces several interesting features on fish migrations, methods of fishing, value of catches in other waters.

The principle back of the book is the need for greater development of the North Sea fisheries after the war. He complains of the lack of interest in the fisheries on the part of the public and their apathy to the importance and economy of fish as a food. A note of warning is sounded as to continental competition in the exploitation of the North Sea fisheries after peace is declared, and he advises British fishermen to be prepared to maintain supremacy in an industry which means much to Britain in export trade and in the manning of naval and merchant ships.

All that Mr. Neal says can be applied to Canada in the development of our own fisheries, and we heartily recommend this book to Canadians—not only those directly interested in the fishing industry, but also those thoughtful citizens who are now studying ways and means for the economic development of our natural resources as a medium for paying our debts and adding to the wealth of the Dominion.

A number of copies of "The Fisheries of the North Sea" has been imported by the "Canadian Fisherman" and can be procured from this office for \$1.25 post free.

INSPECT HERRING PACK.

The department of the naval service has appointed William Wilson, of Prince Rupert, B.C., to advise and instruct western packers of herrings and inspect and brand their cured product during the ensuing herring season. The new inspector, who has had a thorough training in barrel-making and herring curing, will have his headquarters at Nanaimo. Mr. Wilson is a returned soldier.

Prince Edward Island Notes

During the past month fishing in Prince Edward Island has been confined mainly to smelts, the majority of these being caught through the ice in gill and bag nets. There are about 400 men engaged in handling the former and about 250 the bag nets.

The fishing has been carried on mainly in the Clyde, Vernon and East Rivers in Queens County, around Alberton, Richmond Bay and other waters of Prince and at Murray Harbor, Little Harbor and in various sections of Kings.

The catch so far has been an advance, of that of last year and as the season does not close until February the 15th, it is expected that the total market value will be considerably in excess of \$54,000, which were the figures for 1917. Quite a number of the fishermen this season will net over \$1,000 each. In one night for instance, two men landed a ton and a half at Vernon River which selling at 9½ cents a pound realized \$285.00.

Another feature in the fishery situation last month was the organizing of a company to be known as the

Georgetown Fish Company. Its main object being to cure and market small herring commercially known as bloaters. The Company will also handle all kinds of fish. The smoked herring industry was carried on in Georgetown some years ago, but it was discontinued in 1912. The buildings are still standing and these have been put in shape in readiness for the spring fishing. An expert from Grand Manan, who has had a long experience in handling smoked herring in different parts of Maine, New Brunswick and the Magdalenes, will be placed in charge.

Georgetown Harbor has always been a favorite feeding ground for spring herring; and the smoker located by a comparatively short distance from the grounds. The lack of facilities, however, has handicapped enterprise in the past. The new company purchasing traps and expect to have no difficulty filling the smoker twice each season. It has a capacity of 1,500 barrels. In the event of fish not striking around Georgetown, the Magdalene Islands will be available as a source of supply.

Eaton Company's Model Fish Department

The Canadian Fisherman is indebted to the T. Eaton Company of Toronto, for the enclosed photograph of the fish display case used in that company's store in Winnipeg which has enabled the concern to conduct a fish department right in the midst of the meat and grocery section, without the undesirable odor often attendant to retail fish stores. The secret of the suc-

cess of this display and absence of odor lies, of course, in the display case.

The cases were designed according to plans laid down by the managers of their fish department at Winnipeg. The object they had in mind was to avoid the necessity of building a glass partition all around the fish department. It is possible that other coun-



Fish Department of T. Eaton Company, Winnipeg.

of a similar type have already been constructed, but these counters built to order by the company are the first of the kind to come to our attention.

The tank is practically air-tight when the doors are closed. The only opportunity for odors to escape being through the outlet drain. The inside of the ice and fish tray is covered with galvanized iron, enameled white, and on this is placed an oiled tray raised above the bottom sufficiently to allow some six inches of air space. The ice and fish rest on the wooden slats of this tray, all liquid being drained below and strained through into the outlet. There is sufficient air space all around, between the inside linings of the tray to provide sufficient refrigeration, while the plate glass top and sides give a clearer view of the fish and, at the same time, keep it entirely covered. The doors with spring hinges are similar to ice box doors, being of double thickness and the springs guarantee their being closed at all times, except when fish are being put in or taken out.

It is interesting to note that thousands of pounds of Pacific flatfish and cod are retailed across these counters every week. These fish arrive frozen and conditions within the cases are so perfect as regards refrigeration, that the fish can be kept two days, or longer, before thawing out. Of course the salesmen do not make a practice of placing on display more than enough fish to supply the day's demands, the reserve being kept in refrigerators near at hand.

CANADA—GET BUSY!

Since the war the exports from the United States to Australia have shown a considerable expansion, and the quantity of fish and fishery products has increased. An official American report states that while the value of the exports of preserved fish in tins in 1913 was \$951,232, the value in the fiscal year 1917-1918 amounted to \$1,204,744. The increase in other fish was from a value of \$29,658 in 1913 to \$79,736 in 1917-1918. Hitherto Australia has been a very good market for British-cured fish, especially perhaps tinned herrings and other tinned fish, and it is to be hoped that now the war is over we shall be able to send larger quantities than ever.—Fish Trades Gazette.

SAVED BY GASOLINE AUXILIARY ENGINE.

Fredericton, N. B., Dec. 11.

A letter, received to-day by a relative in this city, contained the distressing information that Captain Joseph A. Read, of Fredericton, understood to be the oldest active navigator of Canada, had the misfortune to lose his vessel, the tern schooner Silver Leaf which ran aground while en route to Barbadoes from equatorial waters for repairs. Her cargo of lumber, consigned to Cape Town (S. A.), was salvaged.

The Silver Leaf sailed from St. John, September 11. She was to have sailed a week previously, but the captain, while looking over the vessel preparatory to sailing, discovered that the gasoline engine, a very necessary adjunct to a sailing craft these days, was not in working order. An expert who was called in condemned the machine, and the "Silver Leaf" did not put to sea until a Fairbanks-Morse, 10 h.p. Type Z engine, operating a 6 inch F-M centrifugal pump was installed. It was the intention of her owners, New York parties, that the schooner after discharging at Cape Town should load hides at a West African port for New York. Before reaching Bridgetown bar,

she encountered heavy gales and made water rapidly, being kept afloat only by her gasoline pumps. Later she was becalmed and her bottom was fouled with barnacles. Unable to make headway, Captain Read decided to return to Bridgetown, but in the attempt the Silver Leaf went ashore.

Captain Read is an Albert county man. Prior to taking the Silver Leaf he had been ashore for two years. Early in the war he commanded a schooner which sailed through submarine zones without accident and on his last command took chances with Hun U-boats operating along the Atlantic coast.

LOBSTER CANNERS FORM RESEARCH GUILD.

The actual formation of the First Canadian trade guild for scientific and industrial research purposes is now in process. As a result of a conference at Amherst last week of the Maritime Province Cannery Association with Dr. A. B. Macallum, administrative chairman of the council of Scientific and Industrial research, the association decided to form a federally incorporated research guild. Some twenty-five canning firms were represented at the meeting which was held under the chairmanship of Hon. Senator John McLean of Souris. A committee headed by Mr. R. O'Leary, of Richibucto, was appointed to arrange for the organization of the guild and \$5,000 was voted towards research work in co-operation with the research council at Ottawa.

Immediate problems of research include investigations as to reasons for discoloration of products and cans in lobster and sardine canning, the bacteriology of spoiled products, etc. It is estimated that from five to ten per cent of the lobster and sardine output of the Maritime Provinces now goes to waste through spoiling, involving a loss of tens of thousands of dollars. It is believed that this waste can be prevented by the application of new scientific knowledge to canning processes. The combination of all the cannery into one guild for research in solving their common problems of deterioration, production, etc., will, it is believed, have far-reaching result on the whole fishing industry of Canada.

The maritime cannery have taken the lead in Canada in actually going ahead with the trade guilds for research scheme which is being urged by the research council. Other groups such as the textile industry, the rubber manufacturers, etc., are also preparing to adopt the research idea as now being rapidly developed in the United States and Great Britain. In Great Britain over thirty such guilds are in existence.

LAKE ERIE FISHERMEN WILL PLY TRADE THROUGH WINTER.

St. Thomas, Dec. 16.

Port Stanley fishermen have been advised by the Government that the closed fishing season, which means the expiration of the annual license on December 15, and forbids fishing from then until March 15, has been abolished. The reason for this change in the rules governing fishermen, it is said, is the effect which the recent epidemic of influenza had on the fishing industry. The Government having lifted all restrictions in this way, several tugs have started on further fishing expeditions. Port Maitland is said to be the best field at the present time, and those who recently lifted their nets will again begin work.



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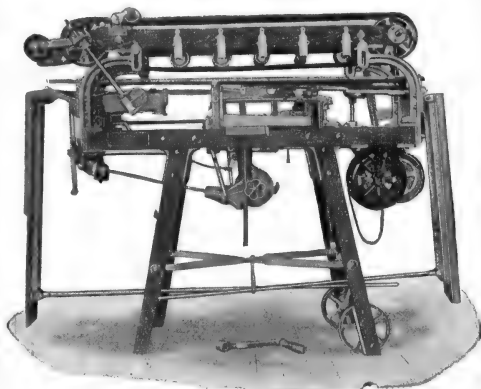
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The British Markets

Billingsgate, E.C.,
16th November, 1918.

There has been a welcome expansion in the quantity of fish available this week, but unfortunately this has been the outcome of a preponderance of one or two kinds, rather than a general all-round increase in the catches. The fish most prominent has been those kinds landed by drifters—herrings, sprats and mackerel. Inquiry for all kinds has continued keen, and apart from the three varieties mentioned above, rates have been easily maintained at the maximum. Herrings, sprats and mackerel, however, have changed hands at all manner of figures, values varying according to the quantity available, and the condition of the fish. Rather curiously, while herrings, both fresh and sprinkled, have hung fire, demand has been insistent for kippers, and despite the substantial consignments received — Billingsgate alone has had round about 14,000 boxes daily—prices have stood firm at the maximum level of 10s 9d per stone (14 lbs.), and what is more, the fish has gone into consumption freely.

Best qualities of the Ministry of Food Canadian frozen fish have again proved welcome, but the general consensus of opinion in this country is that with the rapid increase of landings of fresh fish, which may be expected from the release of fishing boats by the Admiralty, combined with the opening of certain areas which have been closed to fishing purposes during the past four and a half years, there will be little call for frozen fish, except when fish from home waters is exceptionally scarce, and even then prices must be much lower than those recently current for frozen fish. No doubt these rates have been justified in the abnormal times through which we have passed, but the question for Canada now to consider is whether frozen fish at, say, 50 to 60 per cent reduction on those prices will bare the expense of freezing, packing, freight, in addition to storage in the United Kingdom for longer or shorter periods to await an occasional favourable market.

There is still a big call for frozen salmon, and immediately the shipping outlook eases exporters will be well advised to dispatch supplies to Billingsgate.

Billingsgate, London, E.C.
23rd November, 1918.

This week's markets have not presented any particular feature of interest. Apart from one or two kinds, such as herrings and kippers, and to a lesser extent, mackerel, supplies generally have remained short of requirements. Long fish, i.e., cod, ling and similar varieties, continue unusually scarce, and several varieties of flatfish are difficult to obtain. Haddocks remain fairly abundant, comparatively speaking, but the demand from curers is so insistent that prices invariably rule firm at the maximum level.

Canadian frozen fish is still being offered, but apart from a case of pan-frozen fish here and there, the fish now available shows signs of the long storage to which it has been subjected.

All sections of the trade in this country are now eagerly awaiting an easing of the abnormal conditions which have prevailed during the war period. Although no definite information is available it is expected that numbers of steam trawlers and steam drifters will be

speedily released by the Admiralty, while an immediate removal of some of the restrictions regarding the prosecution of fishing operations on several of the areas which have been closed is anticipated. Of course, this would have the effect of at once increasing the catches, to the benefit of all concerned.

Billingsgate, E.C.,
30th November, 1918.

Speaking generally, supplies this week have shown a falling off. Neither Grimsby nor Hull has received any convoys from the deep sea grounds, the only Iceland fish available this week being landed at Fleetwood. In the catches of trawled fish from home waters, plaice and haddocks have predominated, while cod and haddocks were most noticeable in the deliveries from the deep water areas, plaice also showing up well in the latter catches.

The autumn herring season at Gt. Yarmouth and Lowestoft is now rapidly drawing to a close, the bulk of the Scotch boats having already left for their home ports. Taken on the whole the vessels have had a successful season.

So far as the markets in the distributing centres are concerned the arrivals of most kinds of trawled fish have been totally inadequate to requirements, and all the fish has been easily placed at the maximum prices. The herrings too, have commanded full values; and mackerel—chiefly from Ireland—when in good condition has found a ready market at the maximum level of 7s 6d a stone. There has been more or less an abundance of sprats, but these fish have rather hung fire, and except for really bright, large fish inquiry has been very slack at low figures.

The first intimation of a relaxation of Admiralty restrictions is to be found in the announcement that the Port of Scarborough, which has been closed to steam trawlers since September, 1916, is now open once more as a fishing port.

Billingsgate, E.C.,
7th December, 1918.

The week opened with fairly generous landings at several of the principal fishing ports, but a fierce gale over the week-end presaged a further shortage, so that the meagre supplies on subsequent days did not come as any great surprise. In fact, with the exception of Fleetwood, where landings from the home grounds have been augmented by catches from Icelandic waters, scarcity has reigned supreme. This has been reflected in the conditions prevailing at the markets in the consuming centres, all kinds of trawled needing to be rationed out to buyers, and needless to state, there has been little business transacted below maximum rates.

The herring fishing is still being prosecuted in East Anglian waters by a few vessels, but the bulk of the boats have now left for home, so that the general shortage has been accentuated by the falling off in the quantity of herrings available. Mackerel, too, has been far from plentiful. In fact, the only variety at all prominent has been sprats, and these fish have sold well if large and bright, but small rubbishy fish have been neglected.

Yesterday a large shipment of frozen fish from New-

foundland reached this country by the arrival in the Thames of the Bayano with a consignment of frozen cod, fresh haddocks and salmon. None of the fish has been landed up to the time of posting this report, so that it is not possible to state whether the exporters have heeded the remarks made in this column more or less continuously for the past twelve months. Next week it should be possible to report on the condition and packing of this fish, and it is sincerely to be hoped in the interests of all concerned that there will not be the same cause of complaint as there has been with the previous arrivals. It is stated that some of the fish has been packed in lesser quantities than cases of 200 lbs., and if this should be so it could certainly prove advantageous.

14th December, 1918.

Scarcity has reigned supreme at all fishing centres in the United Kingdom this week. Of course, this is not an unusual experience for the time of year, but owing to the Government control of prices, practically all sections of the trade are in a position to buy, and there is thus insufficient fish to satisfy all requirements; under ordinary circumstances, with a free market, prices in times of shortage go beyond the reach of many buyers, and at the level reached in times of light landings the quantity available is usually sufficient for those who are prepared to pay the figures asked. However, in view of the abnormal food situation confronting this country a few months ago, no one can cavil at the action taken by the authorities, and it certainly redounds to the credit of all sections of the fishing industry that business has been carried on during the past few months with the minimum of friction. Now that hostilities have ceased the industry looks for a speedy release of the large number of steam trawlers and steam drifters which have been employed by the Admiralty on National Service, and also, as soon as circumstances permit, of the removal of the restrictions on certain of the best fishing ground adjacent to the British Isles.

The new arrival of frozen fish from Newfoundland mentioned in the last report is now on offer. Apparently those responsible for this shipment have given heed to the comments passed on previous consignments and published in earlier issues of the Canadian Fisherman; the fish appears to have been frozen when perfectly fresh, and great attention has been paid to the grading. Then again, part of the cargo consists of packages containing 80 lb. and 60 lb. respectively, which is a far more convenient package to handle than the unwieldy 200 lb. packages. This fish has been marketed at a most opportune time, and has met a ready sale, being scheduled by the Ministry of Food at 9s 6d a stone wholesale. The shipment consists principally of cod, but also contains a fair quantity of fresh haddocks, together with a few cases of salmon. The reliable quality of this shipment, provided it is maintained all through, should do much to re-establish the confidence of the trade in frozen fish from Canada after the unsatisfactory experience with earlier arrivals, particularly the so-called "hake."

The firm of Peter Forge is again acting as Distributing Agent to the Ministry of Food at Billingsgate, and no doubt that firm will be pleased to answer any inquiries which prospective exporters may address to them regarding prospects for Newfoundland fish on the British markets. One thing is certain, and that is that the present prices for frozen fish must not be expected to continue when supplies of fish from home waters increase, as they are essentially war prices.

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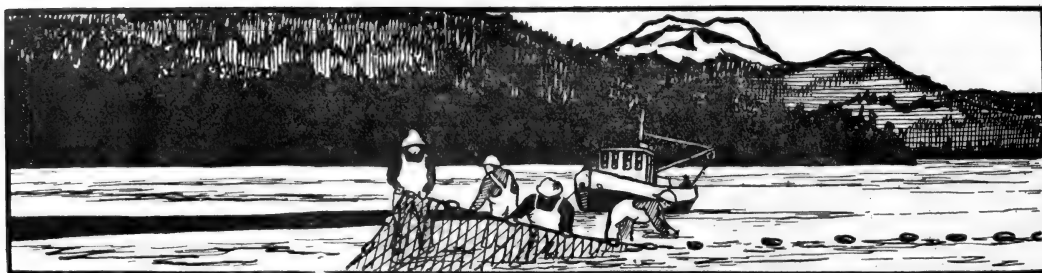
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Newfoundland Fishery Development

By JOHN S. SCOTT.

St. John's, Nfld.

In considering the development of Newfoundland's resources it is necessary to deal with a factor which inaugurates a new era in the country's immense fish business, and which promises to add appreciably to the wealth of the colony.

Practically, heretofore, "fish" in Newfoundland has meant salt cod. Other kinds of marine food products have been traded in to some extent, it is true, and in small quantities have found their way into world markets, but the great bulk of the country's exports of fish have consisted of salt cured dried cod fish. This has been the staple product upon which the trade and prosperity of the country has been chiefly based notwithstanding the fact that the coastal waters abound in a great variety of fish, some of which held out commercial possibilities.

Newfoundland salmon, for instance, possesses a peculiarly delicious flavor, which according to a well-known Scotch fish expert is the equal of the famed Scotch salmon; and haddock, halibut, herring and flounders are easily saleable in foreign markets. Then there is the smelt-like caplin; the turbot, resembling in flavor and appearance, the small halibut; the codfish, wolffish, skate, pollock; and the cod's particular tit-bit, the ink-squirting squid; which is in great demand for bait, and which in Broadway restaurants has been eaten with relish, albeit unconsciously perhaps, as a constituent part of lobster salad. Yet none of these fish have cut any considerable figure in the colony's fish trade, and as articles of food some have been entirely ignored. Caplin, for example, a most tasty little fish, has been considered useful only as a land fertilizer, and other varieties of proven food value have been looked upon by the Newfoundlander as worthless.

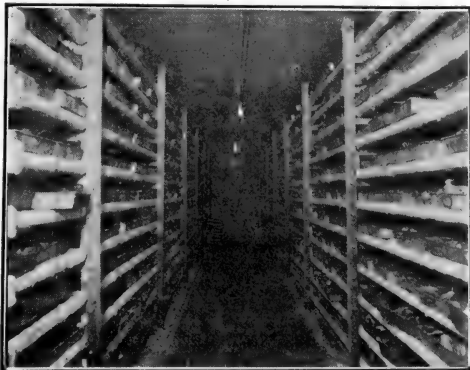
All of this seems likely to be greatly changed by the use of refrigeration for preserving fish of all kinds in its fresh state. Already what appears to be a successful experiment in refrigeration has been made with a plant that is said to be one of the most modern and efficient on the North American continent. This plant has been built in St. John's by the Newfoundland Atlantic Fisheries, Limited, a subsidiary to the Reid Newfoundland Company, in which the two sons of the late Sir Robert Reid, who are now in control of that concern's country-wide enterprise, H. D. Reid, and R. G. Reid, have been the moving spirits.

The refrigerating plant of the Newfoundland Atlan-

tic Fisheries has a storage capacity of 6,000,000 pounds, a cargo for a 12,000 ton vessel, and enough to fill 120 average refrigerator railroad cars. The building which is 90 x 300 ft. is three storeys in height, of brick shell construction, with walls and floods two feet in thickness embodying the latest ideas of insulation. The structure contains eight cold storage rooms in which the fish is held, after freezing. The freezing equipment consists of five sharp-freezers having a total holding capacity of 350,000 pounds. Through these rooms thirty-five miles of 2½ inch pipe is distributed, carrying the circulating ammonia which extracts the heat from the "warm" fish, and within a few hours converts it into an object as hard, and apparently as dry as a stick of wood.

The refrigerating machinery consists of two duplicate machines of 200 ton ice-making capacity, driven by electric motors, the current for which comes from the Reids' hydro-electric plant a short distance from the city. Only one machine is used at a time, the duplicate having been installed for safety in case of trouble. In addition to this precaution, an emergency steam-driven machine of 75 ton ice-making capacity has also been installed, to "hold" the refrigeration in case both big machines are put out of commission. The refrigerating machinery also serves an ice-making plant with a daily capacity of fifty tons, the product of which is utilized in packing the cars and vessels in which the fish is transported to and from the plant.

Much of the fish handled by the Newfoundland Atlantic Fisheries is caught within a short distance of St. John's, and comes to the plant by water in small fishing vessels. Some are taken from the outport waters and sent in by rail. In every case the fish reaches the refrigerating plant within less than twenty-four hours after having been taken from the water, and immediately upon its arrival is thoroughly cleaned and rushed into the cooling room, or a sharp-freezer, in metal pans each holding forty or eighty pounds. After being solidly frozen into a mass at a temperature of from 15 to 30 degrees below zero, the fish is hoisted by elevators to the storage rooms, where a dipping in clean fresh water releases the frozen mass from its container and at the same time gives it a fresh ice coating, or glaze, which has the effect of hermetically sealing up the whole block. In due course the fish is packed in wooden cases in forty, eighty and two hundred pound quantities, and is then ready for shipment.



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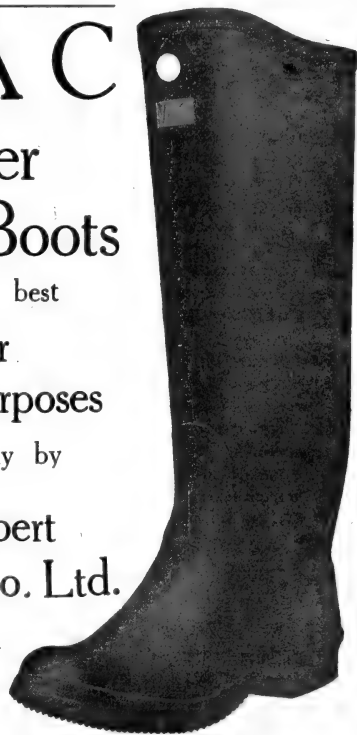
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desiring to know more about the
"Henderson Fish Preserving Process,"
which is patented in Canada and other
countries, should communicate with
GEORGE HENDERSON
Box 2449, G. P. O.
SYDNEY, AUSTRALIA

The influenza stopped the salmon fishing about ten days earlier than would otherwise have been the case, as a great many of the fishermen were laid up. Wallace Fisheries plant at Uchucklesit was closed for a considerable length of time. The steamer "Imbricaria" has been tied up at Rupert for several weeks on account of the malady, and the steamer "New England" has been tied up at Ketchikan as nearly every man has been ill.

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Good judges of fish assert that the Newfoundland storage product which is now beginning to find its way onto the market, is as good in every respect as fresh fish. It is said that after being properly prepared for the table, it cannot, in fact, be told from the strictly fresh article. Refrigerated fish, of various kinds, which have been treated by the St. John's concern have been taken by epicures in the belief that they were fresh-catch, and no one, it is claimed, has yet found any fault with the flavor and quality of the frozen product. In its probable effects upon the country, the enterprise of the Newfoundland Atlantic Fisheries is unquestionably a highly important matter. While the first season's operation of the St. John's plant has had an appreciable effect upon the fish trade of the colony as a whole, it has nevertheless introduced new methods of handling the fish catch, and has created new conditions and opened up new opportunities for Newfoundland fishermen. The time honored system of salting and drying fish, which placed a period of several months between the catching of the fish and the monetary reward for his efforts, remains no longer as a necessary deal with every fisherman. Already many local fishermen have experienced the satisfaction of making their own haul and disposing of it before bedtime at a good price for cash. One perhaps unexpected result the new system has had, has been to encourage fishing, and actually create new fishermen. Clerks in stores, and others who had found nothing to attract them in the slow process of realizing money from the products of the salty deep, have during the past season spent a good deal of their spare time in fishing, and have been able to make more in fishing a few hours a day than they could earn at their regular occupations. Some of these men, it is expected, will give more attention to fishing next year and in the future, if the good prospects promised by this year's operation of the cold storage plant are realized.

Another effect, gratifying alike to the fishermen and the food conservator or economist is the elimination from the fishing industry of the deplorable waste that has existed in the long established system in which the cod has attained a degree of importance which amounts almost to glorification. "The glorified cod," in fact, is not a great exaggeration. Heretofore, the cod has been fished in Newfoundland, and other varieties which intruded themselves onto fishermen's hooks, or into fishermen's nets or traps, have as a rule, when discovered, been promptly and contemptuously returned to their briny homes—often in lots of hundreds of pounds at a time.

The Newfoundland Atlantic Fisheries have been able to receive practically every kind of fish which could be caught during the past season, and thousands of pounds of salmon, halibut and haddock which previous to this year represented waste effort, are now secured in the company's refrigerating plant. This means extra money to the fishermen and extra food to a hungry world.

From this new development it is predicted the total output of fish from the island will be greatly increased year by year, and that as a matter of necessity the farm in which the country's products will reach the markets, will be materially changed. This will mean, inevitably, a general readjustment of business methods and a change in plans by some, at least, of the concerns in the fish business.

To what extent the salt fish industry will be affected

by the refrigerating business no one can say. There seems to be no good reason to anticipate any marked decline in salt fish trading, within the near future, at least; and that eventually there will be any considerable lessening of business in that line does not appear as a necessary consequence. For salt fish, it may safely be assumed, there will always be a strong demand, and Newfoundland is favorably situated to cater to that demand. In South American and European countries the Newfoundland article is highly favored because of its quality, and will undoubtedly continue to be asked for indefinitely. There is, therefore, no reason to fear that the Newfoundland refrigerated fish will displace the salt dried article in foreign markets to any great extent, if at all. The only contingency that might adversely affect the salt fish trading is the possibility that the requirements the refrigerating industry might divert a portion of the country's catch from its customary channel, but this is a condition to be feared only on the assumption that there is only a certain quantity of fish obtainable from Newfoundland waters, or that there are, and will be, only a limited number of men to engage in the fishing industry. Neither assumption can be soundly based. Fish in practically unlimited quantities is, and, presumably will always be procurable in the waters that have unfailingly supplied the colony for four hundred years, and getting men to catch them is obviously only a question of offering sufficient inducements.

The net results in prospect for the colony, therefore, seem to be that the refrigerating industry will, if as successful as it promises to be, stimulate fishing as an industry, and ultimately add much to the wealth of Britain's oldest colonial possession.

The first big shipment from the Newfoundland Atlantic Fisheries went out from St. John's last week to England in the "Bayano" which carried some 3,250,000 pounds. Other shipments will follow, and smaller consignments are now being sent to the American markets.

WHALE MEAT.

Welcome, O whale from frigid zones!

This season's greeting I am giving
Because your girth and meaty bones
Will greatly ease the cost of living!

When turkeys fetch six dimes a pound

And porterhouse is out of sight,

I'll stake my all upon a round

Of whale meat, wholesome, cheap and light!

They tell me that your breast and tail—

To say naught of your fins and blubber—

Are sweet and tender, gentle whale,

To suit the most fastidious grubber!

My New Year's turkey I will can

And try a plate of whale and chips;

The papers say that any man

Who does the same will smack his lips!

There's just one danger I can see

As o'er my tempting meal I gloat;

'T would be a trifle awkward, Gee!

To get a whale rib in my throat!

J. L. Love.

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

119 Youville Square,

MONTREAL

I am in the market at all times to Buy or Sell on Commission,
Fresh, Frozen, Smoked and Salt Sea and Lake Fish, in Carload
Lots or Less.

Correspondence Solicited

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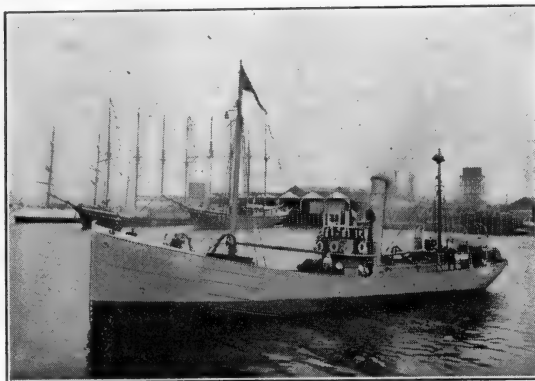
Representing

National Fish Company, Limited

Halifax and Port Hawkesbury - N. S.

“National Brand”

*Hadaies,
Fillets,
Kippers,
Bloaters,
Scotch Cured
Herring.*



STEAM TRAWLER TRIUMPH

Producers

*Fresh,
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SEA FISH

A. W. Fader, Canso, N.S.

National Fish Co., Ltd., Halifax and Port
Hawkesbury, N.S.

Prince Rupert Fishermen had a Good Season

**Publicity Campaign of Canadian Food Control Board
Very Largely Increased the Consumption of Fish all
Over the Dominion.**

How pleasant and satisfactory it is, at this, festive season, to reflect upon the immense growth of Prince Rupert's chief industry, fishing, during the past year, says an article in "Resources." It has done more than any one thing to place Prince Rupert on the map to stay. Prince Rupert is now well-known as a fishing port, and it will take but a few years at the present rate to make it rank among the world's greatest fishing ports.

Now much of this prosperity in the industry is due to one thing, the advertising on a large scale of fish as nutritious and economical food by the Canadian Food Board. Before it began its propaganda advertising fish, very little fish was consumed by Canadians, except in coast towns. It is only in recent years, since the perfection of cold storage, that fish was to be obtained in a fresh state at interior points, and therefore eating fish was not a habit. By constant advertising, by pointing out the nutritive qualities of fish and the many, many dainty ways in which it could be prepared for the table, and by harping on the subject all the time, the Food Board succeeded in converting Canadians into fish-eaters to such an extent that the Board had next to take steps to obtain a sufficient supply of fish for the consumers it had created by its fish campaign.

The Pacific Coast has long been famous for its salmon and halibut and the ready market for these fish resulted in depletion and the climbing of both into the luxury class. Yet there was plenty of other fish, if people were educated up to them and their uses. This the board did. Then started a hunt for cheap sea fish for the citizens of the inland provinces, and found here unutilized brills, soles, red, grey and ling cod and other varieties in enormous quantities.

The Board, by its extensive and attractive advertising made the people's mouth water for halibut and salmon in the hope of decreasing the consumption of beef, which was needed for the army. When salmon and halibut got too high in price for the working man's family,

they sought and produced fish of a cheaper class to appease the appetite created.

Before this campaign of advertising fish begun last year our fishermen used to toss back into the ocean all fish taken except salmon and halibut. Now there is a market for every kind of fish they can bring into port.

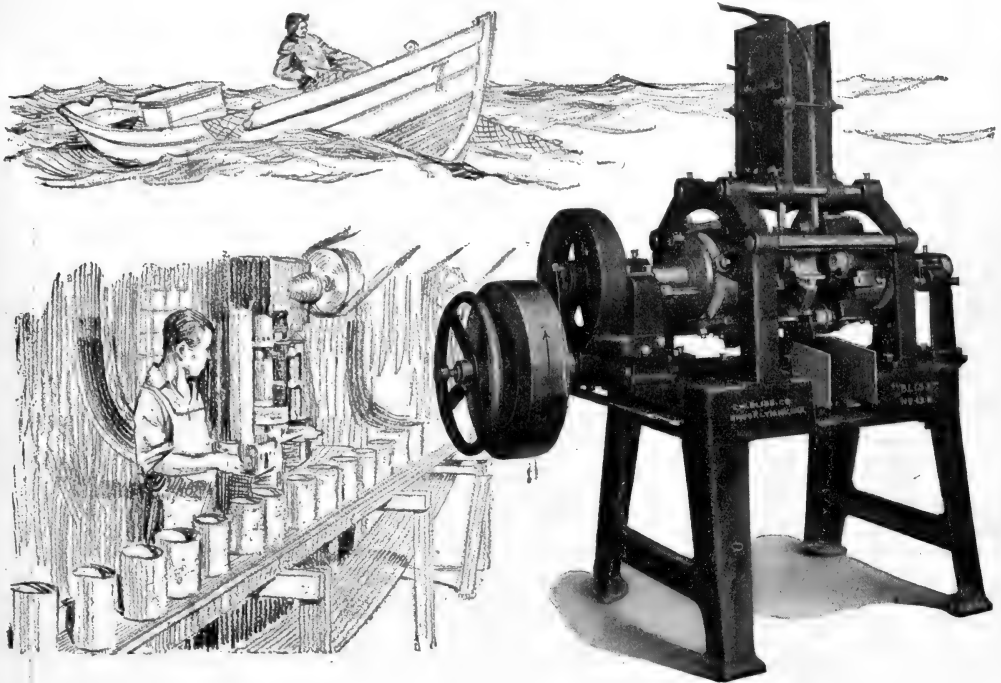
It can be safely said, therefore, that the consumption of fish in Canada has increased one hundred per cent since the start of the Board's operations in this direction. This has been accomplished by its own advertising, and by the advertising of those in the fish business following their lead, and by the sympathetic co-operation of the public generally.

To accomplish this the publicity activities of the Board have been of the most varied and attractive character. Illustrations galore, printed circulars and huge posters everywhere. An accomplished writer who knows all about fish—a combination rarely met with and hard to beat—went out from Prince Rupert accompanied by a motion picture camera man in the trawler Carruthers, and described orally and pictorially how the fish were caught, how they were treated in the boat, landed, dressed, packed in ice and started on their way east. All this has been seen by the people far away from the ocean who were just beginning to find out that fish is good eating, in the movies, and seeing is believing to minds just bursting the bonds of slothful ignorance. And to cap all this, diverse advertising the Board proclaimed a national fish day, October 31st, and for that day there went from this new fishing port no less than twenty carloads of frozen flat fish, so that the fish-hungry folk of Calgary, Edmonton, Saskatoon, Regina, Moosejaw, Winnipeg, Toronto and Montreal might properly celebrate the day.

The outstanding feature of the fish industry during 1918, therefore, has been the tremendously increased production and consumption, both on the Pacific and Atlantic, of those varieties of fish which up to recently



Spring Salmon Caught in Skeena River, B.C.,
district.



Modern Cannery Practice

Allows little time to elapse between the catch and the final operations on the pack. Prompt and continuous streams of all the elements necessary to make cans, are depended upon to avert loss.

Clean cut, high quality output required of all "Bliss" Automatic Can Making Machinery, but steadily continued production at high speed is likewise a feature of importance. These things have been developed in The "Bliss" lines through nearly sixty years of experience and co-operation with cannery and can makers in all parts of the world.

"BLISS" AUTOMATIC ROUND-CAN DOUBLE-END FLANGER, NO. 15-K.
This machine flanges both ends of can bodies simultaneously and is entirely automatic and continuous in operation. It produces flanges on 100 to 150 cans per minute and can be readily adjusted from one size to another.

Write for Catalogue Section No. 18-A



E. W. BLISS COMPANY

Main Office and Works; BROOKLYN, N.Y., U.S.A.

CHICAGO OFFICE
People's Gas Bldg.

DETROIT OFFICE
Dime Bank Bldg.

CLEVELAND OFFICE
Union Bank Bldg.



1857 LONDON, S.E., ENGLAND, Pocock Street, Blackfriars Road 1917 PARIS, FRANCE, 100 Boulevard Victor-Hugo St. Quen

8
d not been popular. They were always eatable but s was not generally known. More particularly was s the case in regard to those varieties of fish produced s the Pacific coast almost exclusively. The different s of cod are produced on the Atlantic as well as s Pacific, and haddock and pollock only on the former. The increased consumption has produced another s ture of the year in the largely increased number of s am trawlers in operation. There are now three here s d five on the Atlantic. This is a remarkable develop- s ment because it brings the fish industry up to date with s of the old country. And next year will see a still s ther increase of the trawlers, as there are quite a s mber under construction.

The future success of the fish industry, in this or any s ner part of the world, depends on the facilities pro- s duced to produce and take care of the commodity in the s ickest possible way, so that it gets into the hands of s e consumer in the best possible condition. In the s d country millions of dollars have been spent in pro- s viding facilities to this end, and now that the Dominion s vernment has done so much to create a national ap- s pite for fish food, it may go one step further and aid s providing quick transportation facilities. It has been s ing something already in the way of a subsidy by s ying a goodly part of the freight rate from this port s eastern cities. But this was no doubt a war measure s increase the rations of the trenchermen in the s enches.

In this connection there is another feature in the s outh of the industry for which credit must be given s the Food Control Board. This lies in the fact that s ere was a much greater percentage of frozen fish s omed during the year than ever before. Well known s entists and physicians have recommended the public s eat frozen fish in preference to the unfrozen article, s rticularly in those cities that are a number of miles s om the source of production.

The industry has also gone "over the top" in anoth- s er direction which is worth calling attention to. Which s in the number of new canneries established on this s east during the year, particularly on the Queen Char- s lotte Islands and the west coast of Vancouver Island. s veral new canneries have been built and operated s ere since the year opened.

In one feature of the industry there has been a fall- s off in the production, to be made up in another. s ere has been less halibut produced than for several s evious years. The first reason for this lies in the de- s tection of the species, and the second reason in the cost s production. This has grown to be so high that in s any cities dealers have refused to buy the product at s e high price asked, and have been giving their atten- s tion to the cheaper varieties of fish, such as flat fish s and cod. The expenses of operating vessels owned by s rge companies has been so high in halibut production, s at many of the vessels have been diverted to other s ranches of the industry.

During the year the Americans tried to fix the mar- s ket price of fish, but the Canadian government declined s to do this and the American government then with- s drew its proposition, and at the present there is no control s of fresh or frozen halibut, salmon and black cod on either s de of the line.

There is one other feature of the year particularly s ratifying to the small fishermen, and that is to be found s in the large quantity of pilchard and herring that have s been canned this year for the first time. These canneries

are for the most part on the west coast of Vancouver s Island, and report is that they have been most success- s ful in marketing the new product.

Altogether it has been a great and glorious year for s the fishing industry, thousands of people on the prairies, s hundreds of thousands in the trenches, having been s brought to a knowledge of how good a food fish is per- s haps for the first time in their lives. The wholesale use s of fish food in Europe during the war cannot fail to s have made Prince Rupert fish famous, and have created s a huge new market for it in these piping times of peace.

INSPECTION OF CURED HERRING IN BRITISH COLUMBIA.

The Fish Inspection Act of 1914 does not compel s packers to submit their product for inspection, conse- s quently, inspectors are appointed in parts of the coun- s try only, where their services are likely to be called s for.

Up to the present time, it was not considered neces- s sary to maintain an Inspecting Officer on the Pacific s coast, because herring curing has been carried on in a s small way by people having a sufficient knowledge s of the business to enable them to sell their output s readily on the strength of their own trade mark.

Conditions arising from the war have since greatly s stimulated this branch of the fishing industry in Brit- s ish Columbia, and a number of packers who lack the s necessary knowledge and experience are being drawn s into it.

In order, therefore, to prevent, as far as possible, s the reputation of all British Columbia cured herring s from being injured by the packing and marketing of s badly cured fish, the Department of the Naval Ser- s vice has appointed William Wilson of Prince Rupert s to advise and instruct packers, and inspect and brand s their cured product during the ensuing herring sea- s son, in accordance with the provisions of the Fish In- s spection Act.

The inspector has had a thorough training in barrel s making and herring curing in Scotland, and those s concerned may rest assured as to his practical fitness s for the work he is called upon to do.

His headquarters will be at Nanaimo, and packers s and buyers who may desire to make use of his services s should address communications to him in care of the s Inspector of Fisheries there.

HUGE OVERSEAS SHIPMENT OF FROZEN FISH.

The steamer Bayano, taking 3,250,000 pounds of s fresh frozen fish from the Newfoundland Atlantic Fish- s eries, Ltd., arrived recently in England. Sir Edgar s R. Bowring took passage by her en route to London, s where he takes up the duties of High Commissioner s for Newfoundland.

The whaling steamer, Haleyon went adrift at Akutan, s Aleutian Islands in a big storm, November 11th, while s her captain and crew were ashore. This is the vessel s which furnished the inspiration for Jack London's story s of the "Sea Wolf." The Haleyon was built in San Fran- s cisco in 1887 and purchased about two years ago by the s North Pacific Sea Products Co. of Seattle, one of the s companies forming part of the Consolidated Whaling s Corporation.

When the Catch comes in!

FROM purse-seiner to labeler, there is one *best* footwear—"Hi-Press". Its superiority over other footwear is so marked—so evident—that you cannot possibly go wrong with it. "Hi-Press" comfort means much when you are on your feet for long stretches and its remarkable wearing quality counts heavily in these war-days of tight purse-strings. Protect your health, ease the strain on your feet and economize—with "Hi-Press." It is the modern improved Boot; *welded* together under high pressure; it *can't* leak. 40,000 dealers recommend it.

The B. F. Goodrich Rubber Co.
AKRON, OHIO — *The City of Goodrich*

HI-PRESS

With the RED LINE
'round the top

The GOODRICH BOOT for Fishermen



ALBERTA AND SASKATCHEWAN FISHERIES.

The northern fishing industry has been pushed out into new fields, or rather lakes, this winter owing to the closing of Lesser Slave lake and Lac la Biche to winter fishing.

Buffalo lake, in Saskatchewan, about 75 miles east of the Waterways railway, is being fished commercially for the first time by the Alberta Fish Company and the McInnis Fish Company. It is a large lake, and is on the old Long Portage canal route between Cumberland and McMurray. Fish will be shipped from a point on the Waterways railway, about 100 miles north of Lac la Biche.

Trout lake, about 110 miles northeast of Grouard, is also being fished commercially for the first time this season. The Western Canada Fish and Produce Company are operating there on a large scale. The fish are hauled to Enilda siding on the Dunvegan railway, a distance of about 110 miles. The route is by way of Whitefish lake and Grouard.

Whitefish lake, about fifty miles northeast of Grouard, is being fished this season by the Arctic Fish Co. The fish are teamed through Grouard to Enilda siding.

At Little Whitefish lake, lying southeast of Whitefish lake, Mr. Feset is fishing for shipment at Enilda.

At Christina lake, on the Waterways railway, about

75 miles north of Lac la Biche, the Athabasca Fish Company is operating.

Lake Mistahae, south of the Wabiskaw lakes, is being fished commercially this winter. Fish are teamed about 50 miles to the railway at Sawridge.

Calling lake, north of Athabasca, is also being fished. The fish are teamed to the railway at Athabasca.

The fish industry of North Alberta has developed to be of great importance. Several hundred men are employed in actual fishing. There are possibly 100 teams or more employed in hauling fish to the railway, and there is besides a large staff employed in the work of shipping, accounting, etc. The fish are shipped chiefly to the large cities of the United States. They are of especially fine quality, and are almost solely whitefish.

SOME TRIP!

What is claimed to be the largest stock ever realized by a sailing vessel on a 10-days' fresh haddocking trip was made by sch. Ruth and Margaret, Capt. Val. O'Neill, at Boston recently, when the vessel took down a check of \$8,715 as the result of a 10 days' trip on Western Banks.

Each of the crew shared the fine sum of \$234 clear. The vessel weighed off 80,000 pounds of fish and struck a lucky market, when fish were scarce and prices were high.

STATEMENT SHOWING THE QUANTITY AND VALUE OF FISH EXPORTED THROUGH THE PORTS IN THE PROVINCE OF BRITISH COLUMBIA, DURING THE FISCAL YEARS ENDED MARCH 31st, 1916, 1917, and 1918, RESPECTIVELY.

	1916.		1917.		1918.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Fresh codfish including:						
Haddock, Ling and Pollock, Cwt.	836	\$2,903	1,184	\$4,957	1,382	\$6,636
Dry salted codfish.....Cwt.	547	3,582	17	206	50	750
Wet salted codfish.....Cwt.	41	184	..	..	8	52
Pickled codfish. ....Cwt.	..	..	200	1,000	245	1,440
Smoked codfish. ....Cwt.	519	3,830	728	6,448	602	7,726
Pickled Mackerel .....Brls.	..	..	49	922	225	5,025
Fresh Halibut .....Cwt.	7,250	46,007	2,039	16,726	791	7,689
Pickled Halibut .....Brls.	..	..	45	725	..	..
Fresh Herring .....Cwt.	2,700	2,387	5,079	7,289	96,639	109,415
Pickled Herring .....Brls.	100,889	299,147	133,560	312,015	18,003	227,843
Canned Herring .....Lbs.	289,314	22,341	1,829,382	163,774	2,255,880	268,716
Smoked Herring. ....Cwt.	829	4,693	993	6,128	1,306	12,884
Eels .....\$	..	..	..	68	..	..
Smelts .....Cwt.	1,150	4,269	672	3,978	129	1,076
Other fresh fish (sea)....Cwt.	73	853	368	4,494	8,970	15,999
Pickled sea fish.....Brls.	..	..	..	..	132	1,551
Preserved sea fish.....Lbs.	82,520	5,188	40,664	2,804	4,386,398	42,697
Fresh Oysters. ....Brls.	218	2,274	170	2,325	878	9,714
Canned Lobster. ....Lbs.	357	115	96	32	2,400	1,120
Fish for Bait .....Brls.	..	..	414	898	2,551	6,058
Clams .....Brls.	..	..	23	76	30	93
Fresh Salmon .....Cwt.	12,519	45,682	19,884	84,534	39,779	208,662
Smoked Salmon .....Lbs.	283	30	829	106	3,858	708
Canned Salmon .....Lbs.	31,598,976	4,044,660	17,982,223	2,057,277	22,194,449	4,045,961
Pickled Salmon .....Brls.	7,605	47,148	4,549	74,628	1,123	28,772
Dog Salmon .....Cwt.	205,956	224,893	187,213	263,758	100,544	349,221
Salmon or Lake Trout....Cwt.	..	..	5	25	..	..
All other Fresh Fish.....\$	..	1,490	..	2,774	..	6,691
	4,761,676		3,017,967		5,366,499	

ECONOMY AND CONSERVATION

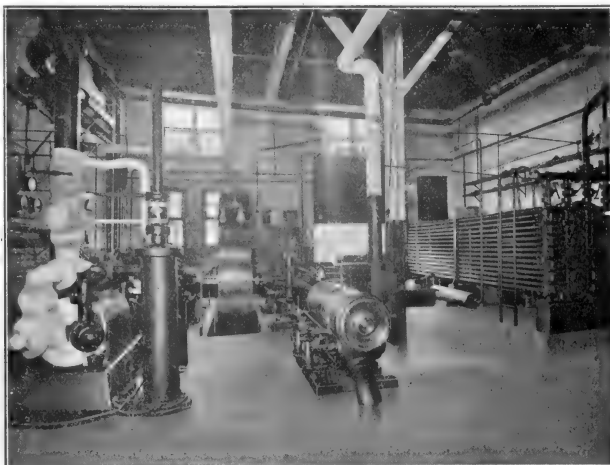
Are the watch words of to-day—True economy in fish plants can only be maintained by the installation of machinery that will conserve power and maintenance cost, yet give the most efficient results.

Ask at the Largest
Fish Plants in
Canada.

Their success is due
to the above facts, all
of which are embodied in

LINDE

MADE
IN
CANADA
MACHINERY



Your requirements
will be given
the benefit of 25 years
of careful study
of the
conditions in Canada.

Write for
Full Information

COMPLETE
PLANTS
DESIGNED
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THE STANDARD REFRIGERATING MACHINE

THE LINDE CANADIAN REFRIGERATION CO., LIMITED

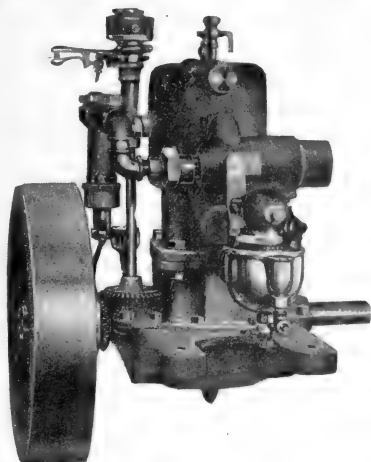
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WINNIPEG

VANCOUVER

IMPERIAL MOTORS



5 H.P. Model "A"

When you buy an Imperial you are getting an engine backed by years of service so satisfactory that Imperial Motors are the standard fishing boat engines of Eastern Canada and are to be found in every fishing district in Canada and Newfoundland. They are the best that money, skill and experience can produce.

General Dimensions of 5 H.P. Model "A"

Bore of Cylinder	4 1/2 inches
Stroke	4 "
Weight, engine only	280 lbs.
Complete shipping weight, with outfit	420 "
Diameter of Propeller, 2-blade	18 inches
Diameter of Propeller, 3-blade	16 "
Shaft diameter	1 inch
Shaft length	5 feet

For full information regarding this or any other Model send for catalog. State size engine required.

The Motor that Makes the Mark.

BRUCE STEWART & COMPANY, LIMITED.

Drawer 370, CHARLOTTETOWN,

P. E. I.

ONTARIO GOVERNMENT FISHERIES.

During the first year of its sales of fresh water fish, which ended on October 31 last, the Ontario Government distributed in the Province approximately 3,000,000 pounds of this lake food, according to the annual report of the sales branch made to the Minister of Public Works, Hon. F. G. Macdormid. The total amount of money received for the fish during that period was \$234,594.65. After all expenditures and allowances had been made, including about \$25,000 for docks, sheds, etc., at Lake Nepigon, there was a profit of \$14,000.

One result of the Government opening up fishing operations in Lake Nepigon is that the Indians in the northern part of the Province have been able to get on the market fish which they caught in the streams. Approximately \$12,000 was paid to them by the Government. Heretofore but a small proportion of the fish caught by the Indians in that part of the Province has been marketed.

Hon. Mr. Macdormid is well pleased with the showing made by the sales branch in the first year. "We have had a few small losses, but that was to be expected in the handling of perishable food," the Minister stated. The government is now devoting its attention to the securing of cold storage accommodation in which to place fish next summer for sale during the winter of 1919-20. About 200 tons is being placed in storage this fall by the department and it is hoped that this amount, with the fish caught during the winter months, will meet the demands of the consumers.

This year the Government secured the fish it required, in addition to that taken from Lakes Nipissing and Nepigon, by requisitioning 20 per cent of the fish caught by the fishermen throughout the Province, under the license system. It was hinted a few weeks ago that it might be necessary to increase the percentage of fish taken from the fishermen to meet the demand next year. However, Mr. Macdormid said that this would not be necessary. He felt that 20 per cent of the fishermen's catch would be ample to meet all demands.

CHINOOK SALMON FOR ST. LAWRENCE BASIN.

After consultation with the fishery authorities of New York, the Bureau has begun an experiment looking to the acclimatization of the chinook or quinnat salmon in Lake Ontario and St. Lawrence River. Chinook eggs to the number of 820,000 have been received at the Cape Vincent (N.Y.) hatchery from the Little White Salmon station on the Columbia River. The resulting young will be planted under favorable conditions at points to be determined later.

In co-operation with this plan, the fishery authorities of the Dominion of Canada have forwarded from the Fraser River for incubation in the Government hatchery at Belleville, Ontario, 500,000 chinook salmon eggs, the young from which will be planted in international waters of the St. Lawrence basin.

CAN KEEP FISH INDEFINITELY BY NEW INVENTION.

A new drying process by which meats and fish can be kept indefinitely and then restored to their former state of freshness by the application of water, and which, it is believed, will increase the world's meat shipping capacity more than twelve times by doing away with the need for refrigeration, has been perfected in the chemical engineering laboratories at Columbia University.

JAPANESE AND SIBERIAN SALMON FISHING.

(United States Consul General George H. Seidmore, Yokohama, September 28, in United States Commerce Reports.)

The total catch of Kamtehatka salmon for this season is estimated at 400,000 boxes, including 300,000 boxes of red salmon, 50,000 boxes of other salmon, and 40,000 boxes of kind silvers, but the takes in Karafuto and the Kurile islands are very small. The quantity of red salmon is nearly equal to the original estimate, but the others are much less, trout being only one-fifth of the usual quantity. The reason for this is thought to be the unusually large arrival of red salmon, to which the fishermen have devoted most of their attention.

English and French demands are fairly active, but the high freight rates and shortage of space are restricting transactions. The producers of canned salmon stand very strong and are asking high prices, partly because of the increase in the cost of production. Probably in consequence of this, England and France are officially restricting the price of salmon, and no red salmon can be imported into England at £5 or more. Moreover, the English Government has just opened negotiations with the American Government for the importation of salmon direct, and a certain firm in England is said to have been prohibited from importing Canadian and American salmon. In America recent official prices for red and pink salmon were \$9.40 and \$6.40 respectively, per case of 48 No. 1 tall cans. These officially fixed rates are much lower than the prices in Japan.

U.S. NOT TO BUILD FISHING VESSELS.

The U.S. Government is not to take any part in the building of fishing vessels on the Atlantic or other coasts. The information was contained in a telegram from Kenneth Fowler, in charge of the fish division of the United States Food Administration, to the New York Federal Food Board. The telegram says:

"Food Administration program of building fifty steel trawlers on the Atlantic coast to enter the fish industry has been definitely abandoned and that no trawlers or fishing vessels of any kind will be built as part of any program of the Federal Government."

CANNED SALMON FROM THE YUKON.

The U.S. Bureau of Fisheries has received from the packers a sample of the chinook salmon canned on the Yukon River this year by the Carlisle Packing Co. This is the first season that salmon canning has been done on the Yukon. This stream is reported to have a large run of fish, but difficulties connected with transportation, ice, and labor are so serious as to greatly retard or embarrass both commercial fishing and canning.

The Yukon River chinook ranks high as to color, oiliness, and flavor. The pack is regarded as the equal of that from any other stream.

MAINE SARDINE PACK IS WORTH \$17,000,000.

For the season ending December 1, Maine factories packed 2,500,000 cases of sardines. Each case contained 100 cans, making a total of 250,000,000 individual cans. It had not been expected this figure would be reached, but a big run of herring the last three weeks sent the totals climbing.

The gross value of the pack is between \$16,000,000 and \$17,000,000. The net profits to packers, however, will not be so great as usual. This is due to the extreme high price for fish and labor, combined by the government price-fixing.

THE CANADIAN FISHERMAN

A MONTHLY JOURNAL DEVOTED
TO THE COMMERCIAL FISHERIES
OF CANADA AND NEWFOUNDLAND
THE SCIENCE OF THE FISH CULTURE
AND THE USE AND VALUE
- OF FISH PRODUCTS -

F. WILLIAM WALLACE
EDITOR

**The Industrial & Educational
Press, Limited**

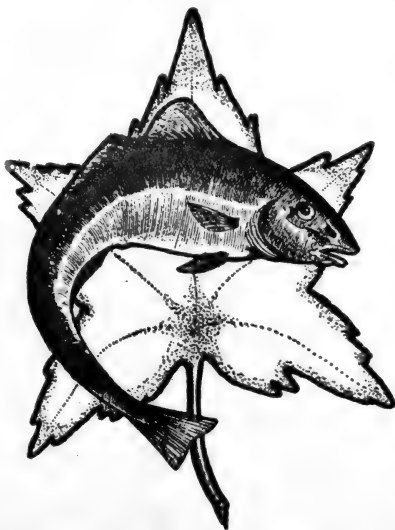
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**ADVERTISING RATES
ON APPLICATION**

Published on the 24th day of each month. Changes of advertisements should be in the publisher's hands ten days before that date. Cuts should be sent by mail, not by express. Readers are cordially invited to send to the Editor items of Fishery news, also articles on subjects of practical interest. If suitable for publication these will be paid for at our regular rate.

Official Organ of the Canadian Fisheries Association

Vol. V.

MONTREAL, DECEMBER, 1918

No. 12

THE Editors and Publishers of "The Canadian Fisherman" join in wishing their many friends and those engaged in the fishing industry of Canada all personal happiness and business prosperity during nineteen hundred and nineteen. We also desire to extend to those connected with the fisheries and the fish trade who have been fighting in the cause of liberty a safe, happy and early return.



Auxiliary Motor Schooner "Samuel Courtney"

1918

Equipped with

**2-100 H.P. Fairbanks-Morse
type "C.O"**

Semi-Diesel Crude Oil Engines

Twin Screw
7 Knots
531 Gross Tons
441 Net tons
171' long
35' beam

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Owner.

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When Geo. M. Barr was deciding on the Power Equipment for the "Samuel Courtney" he chose what he considered the best money value on the market—

Fairbanks-Morse Type "C.O" Engines.

They were selected because of proven economy, using low priced fuel oils. They give perfect regulation under light, heavy, or intermediate loads. Made in sizes from 30 to 200 H. P.



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75 Prince William St., St. John, N.B.

798 Beatty St. Vancouver, B. C.

Halifax, Quebec, Montreal, Ottawa, Toronto, Hamilton, Windsor, Winnipeg, Saskatoon, Calgary Victoria.

PUBLISHER'S ANNOUNCEMENT.

This issue of the Canadian Fisherman has been somewhat delayed owing to the removal of our plant from Montreal to St. Anne de Bellevue, Que. In future, the Canadian Fisherman will be published from our model publishing plant—the Garden City Press—which, fully equipped with modern machinery and located in one of the most picturesque suburbs of Montreal, will give us an opportunity to greatly extend our work under the most favorable conditions. All mail for the Canadian Fisherman should be addressed “Garden City Press, St. Anne de Bellevue, Que.” A business office is maintained in Montreal at Room 30B, Board of Trade Building, and in Toronto, at 412 C.P.R. Building.

1918—A RETROSPECTION.

The year 1918 opened with the Empire still in the throes of the Great War and the end uncertain, though we all felt that the outcome would see our arms victorious. The fishing industry came into closer contact with war measures by the extended scope of the Food Controller's Office, which became the Canada Food Board at the beginning of the year. Under their regulations, all wholesale and retail dealers in fish were licensed, and the former were called upon to report their operations monthly. The license fees charged were moderate, and the industry received an adequate return in the greatly stimulated consumption of fish through the Food Board's propaganda work in urging the public to eat more fish as a substitute for the meats required for export.

The fishing industry were exempt from price regulations except in two instances—that of the Western lake fishery and the New Brunswick sardine fishery. The prices fixed were regarded as fair by the trade and in the former case, the regulations resulted in greatly increasing the home consumption of fish from the waters of Manitoba, Saskatchewan and Alberta. The business of exporters may have been cut down somewhat, but the Food Board's object was satisfactorily obtained and the firms and individuals engaged in the Western lake fisheries co-operated loyally.

In March, 1918, the fishery and market for Pacific flat-fish and cods was established by the Food Board, and the Marine and Fisheries Department, and steam trawling on the Pacific got away to a good start. A new era has begun in the British Columbia fisheries which can be maintained in post bellum years. Prices on these fish were regulated by the Board, but purely for the purpose of creating a market and not as a restrictive measure.

As a fostering genius to the Canadian fishing industry, the Food Board assisted the trade in many ways too numerous to recount here and for much of the good work which has been done, the industry is indebted to the officers of the Canadian Fisheries Association, who co-operated with the Food Board to the fullest extent, and also took up many important matters with the railroad and express companies and Governmental Departments to the ultimate benefit of the fishing industry and fish trade. Two most important Fisheries Conventions were held during the year. One was the International Fisheries Commission of Canada and the United States—a notable outcome of which was the removal of the restrictions on Canadian fishing vessels running their

fish direct into U.S. ports. The basis was also laid by the Commission for eradicating much of the misunderstanding and friction hitherto existing between Canada and the United States on fishery matters. The second convention was that of the Canadian Fisheries Association at Halifax in August, 1918, at which many important matters affecting the industry were discussed and resolutions passed. Several of these will be acted upon this year, and good will result. The Association Convention was the largest fisheries gathering ever held in Canada and was a further evidence of the growing cohesion of the industry from coast to coast in matters affecting the progress and development of the fisheries.

The Association added two important branches to its membership—one in Vancouver and another in Winnipeg. It also, in conjunction with the Food Board and the Ontario Government Fisheries, maintained an excellent Fisheries Exhibit at the Canadian National Exhibition, Toronto, from August 26th to Sept. 7th, 1918.

The war was brought home to the fishing industry on the Atlantic Coast by the operations of German submarines from August to October. Several fishing schooners were sunk and the Halifax steam trawler “Triumph” was captured and used as a raider and ultimately destroyed. A new trawler was added to the Nova Scotia fleet in 1918 when the Leonard Fisheries, Ltd., purchased the “Baleine.” The Maritime Fish Corporation, Ltd., chartered the Icelandic trawler “Ran” and operated her during the year. Six trawlers are now fishing in Canada—four on the Atlantic and two on the Pacific. During 1919, this fleet will be increased.

Hotels and home throughout Canada are using double the quantity of fish consumed prior to the war. Markets have been made for the commoner and cheaper grades of fish and the trade in frozen fish has received a considerable impetus. There is a noticeable improvement in the retail handling and display of fish and evidences of aggressive advertising in pushing the sale are becoming commoner every day.

Three valuable reports were issued during the year: The Canadian Plaice by Dr. Huntsman; the Report of the B.C. Salmon Fisheries Commission, and the Report of the Special Trade Commission to Great Britain, France and Italy. The two first named were issued by the Department of Fisheries—the latter by the Department of Trade and Commerce. These were in addition to the Provincial and Federal Fisheries Departmental blue books.

National Fish Day—an annual event inaugurated by the Canadian Fisheries Association—was held on October 31st, 1918, and was a phenomenal success—no less than 2,500,000 lbs. of fish being consumed on that day alone. The industry is indebted to the Food Board for their co-operation with the C.F.A. in making the annual Fish Day of 1918 a record breaker.

The exports of frozen fish to Great Britain which was a feature of 1917, fell off considerably during the past year—Newfoundland securing the bulk of the orders. The whole of the sockeye salmon pack and a large proportion of the higher grade canned salmon was commandeered by the British Ministry of Food in November and caused some confusion on the coast and disturbed the existing channels of trade. The canning of pilchards received some impetus through this condition,

and a considerable pack was put up to take the place of the commandeered salmon in the market. Fish remained prominently on the soldiers' rations during the year, both in Canada and overseas.

The past year has been a prosperous one for the fishing industry as a whole, and in the salt bank and dried fish trade, prices have been unusually high. In other lines of fresh and frozen fish for the home market, the price to the fisherman has been good, but to the consumer, there is but little advance over pre-war prices—the intermediate handlers being content with the increased volume of sales and small profits.

In the outlook for the future, the industry is hoping that the Overseas Trade Commission will be able to secure a good share of fish orders for export for Canadian producers. The propaganda for increasing home consumption should be carried on as aggressively as during the past year, if not by the Canada Food Board, then by the Canadian Fisheries Association working in conjunction with the Department of Marine and Fisheries.

The victorious conclusion of the war finds Canada's fishing industry in good shape and there is every reason to believe that 1919 will bring further progress, development and prosperity. It has been our pleasant duty to prophesy thus during the five years of the Canadian Fisherman's establishment, and each of these years has seen an advance in the value and prosperity of the Canadian Fish Trade and Fishing Industry.

NEXT ANNUAL CONVENTION, C.F.A.

From answers received by the Secretary, it seems to be the general desire of the Association's members that the next Convention be held in Vancouver, and many have signified their intention of attending.

The Pacific Coast deserves the Association's attention—not alone from the importance of its fishing industry and the many members located in British Columbia, but also from the fact that very few of our middle West and Eastern members have crossed the Rockies and beheld the wonders of the West Coast. Most fish men are too busy to take the time off for a mere pleasure tour to the Coast, but the combination of pleasure and essential business as afforded by the Convention makes an ideal scheme in which the two can be combined.

The Vancouver members, the Mayor and the Board of Trade have extended cordial invitations, and will see that the Association is accorded a hearty welcome during their Convention. The programme will be a most important one, as many after-war problems will be discussed and new lines of action recommended and acted upon.

Let all the C.F.A. members keep the Victory Convention in mind and begin now to arrange their affairs in order to attend the meeting. The date will be decided upon later and sufficient warning will be given.

CHARGE FOR PACKAGES.

Supplementing discussions upon the above subject at the Halifax Convention, a meeting of the Executive Council held in Montreal on December 4th passed the following resolution:—

RESOLVED that the Canadian Fisheries Association goes on record that fish packages (boxes, barrels, kegs, drums, etc.) should be charged for separately instead of being incorporated in the cost of the fish.

This, to our mind, is a step in the right direction, and should be adopted by all producers and wholesale dis-

tributors during 1919. The trade is well aware that the boxes are incorporated in the cost of the fish and the charge runs from half a cent to one cent per pound, but the general public has, of late, been stampeded into making accusations of excessive profiteering through ignorance of this fact. They hear of the prices paid the fishermen and of the prices charged by the wholesale and retail handlers who have to bear the package costs, and being ignorant of the custom, they write the Food Board or Cost of Living Commissioner and complain of the excessive spread between fishermen and retailer.

The fish trade in Canada is about the only one making no separate charge for packages. Dry goods, boot and shoe, grocery and other trades all make a charge for packages separately and their doing so affords a good precedent. In future, we would like to see the Association's recommendation adopted by the fish trade throughout Canada.

CANADIAN FISH CONSUMPTION INCREASED.

That there has been a considerable increase in the consumption of fish by Canadians during 1918 is an undoubted fact, and we hope in a later issue to give figures illustrating the increase. The propaganda work of the Canada Food Board and the Canadian Fisheries Association has been wonderfully effective, and the stimulus given to the home consumption of fish through war time exigencies, will, we feel sure, continue for all time.

Figures received by the Fish Section of the Canada Food Board from some of the retailers and distributors show gratifying increases—one Ontario firm selling a million pounds over the sales of 1917. Practically every wholesaler and retailer of fish in Canada has increased their sales and quite a number of new concerns have been established during the year.

The eating of fish has been effectively separated from Friday and we must strive to keep it away from the one day a week business. Fish should be just as much of an every-day food as meat and all our dealers should endeavour to make it so. The Fish Day, so-called, should be banished from the calendar, and any day or every day be a Fish Day. The meat trade have no orthodox restrictions in the way of Beef Days, Pork Days, Mutton Days, etc. To our mind, the relegation of fish consumption to certain calendar dates has done more to restrict the trade than anything else.

INCREASE IN EXPRESS RATES.

The Express Traffic Association of Canada sprung a mine under the front line trenches of the Canadian Fish Trade when they issued their recent application to the Board of Railway Commissioners for an increase in express rates. The increases asked are on a par with the demands of the Brest-Litovsk Treaty and if granted would wipe the Canadian home trade in fish completely off the map.

Needless to state, the application aroused a storm of protest from the trade concerned and both the Canada Food Board and the Marine and Fisheries Department have protested strongly against any increase being granted insofar as fish is concerned.

The President of the Canadian Fisheries Association, Mr. A. H. Brittain, and Mr. Spooner, Chairman of the C.F.A. Transportation Committee, took the matter in hand immediately and communicated with both the Food Board and the Fisheries Department. The Association intends to fight any increase whatsoever on express rates for fish, and all the members are solid in their protest.

as it would practically ruin the business.

In our opinion, the express rates on fish at present are as high as the traffic can stand and one only need point to the fact that it has been necessary for the Government to bear one-third of the express charges, and two-thirds of all transportation charges on Atlantic and Pacific fish respectively in order to build up a market. Any increase in rates means an increase in the price to the consumer and as fish is holding its market at present by extensive propaganda work on the part of the Government and the Association who have pointed out its relative cheapness as compared with meat, a rise in price will divert the consumer to buying meat thus defeating the objects of both the Canada Food Board in saving meat, and the Fisheries Department and the C. F. A. in developing the fishing industry.

We must emphasize the seriousness of this matter to the fish trade and urge all concerned to communicate with either the President or Chairman of the Transportation Committee of the Canadian Fisheries Association in order that their hands might be strengthened in fighting these increases when the matter comes before the Railway Commissioners at Ottawa, January 7th; Toronto, January 13th; Montreal, January 16th.

INTERNATIONAL FISHERIES EXHIBITION.

The Fishing News of Aberdeen, Scotland, suggests the holding of an International Fisheries Exhibition. We reprint herewith part of the suggestion:—

"Such a gathering would bring, as it brought before, all the wise men interested in fishery matters to a great 'round table'; it would give the great manufacturers, engineering, shipbuilding, etc., the opportunity of showing what they are prepared to do in the way of producing the latest in trawler, smack, drifter, or fishing boat, and it would give the industry the added energy and newer spirit which even the fishing industry requires.

But it would do still more. It would focus the attention of our legislators. There would be an opportunity for settling forever many vexed questions, for at such an exhibition there would be papers on every subject of interest to the industry, and these would be given by men whose opinion carried weight."

While we cannot just see how much benefit the North American countries would get from an exhibit of such a broad scope, yet we think that an International Fishing Exhibition confined to the United States, Canada and Newfoundland, and possibly the West Indies, might be productive of great good to our particular fisheries, and would ensure many of the beneficial tendencies described in the British scheme.

The opinions of our readers would be appreciated by the editor.

STEAM TRAWLING OUT OF LUNENBURG.

Three steam trawlers are now being fitted out for next season's bank fishery. These craft are of wood constructed in Shelburne and LaHave, N.S., and are around 150 feet in length. It is reported that other similar craft are building. They will probably engage exclusively in the salt bank fishery. Lunenburg skippers are at present sailing in Boston trawlers to become acquainted with the method of steam trawl fishing.

The Maritime Fish Corporation, Ltd., will exhibit samples of their fish products at the coming Lyons Fair in France.

PISCATORIAL PARAGRAPHS.

"Boston will build no more sailing fishing craft," said a witness at the recent Fish Trust investigation there. "Steam trawlers and power boats are being built in place of the Bank schooner." In a few years the handsome "Banker" with her lofty spars and nested dories will disappear from the fresh fish trade.

Major Hugh Greene is expected back in Canada some time in January.

Leonard Fisheries, Ltd., have a fine new depot at North Sydney, C.B., and will handle a great deal of fresh fish from the prolific fishing grounds of the Gulf and Cape Breton.

On December 9th, fresh hake was sold for \$17.00 a hundred pounds and large cod at \$15.00, at the Boston Fish Pier. And to think that in Canada, fresh hake is hardly saleable in our inland markets!

During 1918, Canadian fish exports were valued at \$33,290,126. The fish imports were valued at \$2,741,161. The exports show a substantial increase in values.

Capt. Chas. Colson, of the Boston fresh fishing schooner "Natalie Hammond," stocked \$85,329 during 1918. The crew shared \$2,425 clear of expenses. There's money in fishing with a high liner. Capt. Colson doesn't need to change jobs with the skipper of an Atlantic greyhound as far as remuneration is concerned.

The British fishermen are agitating for a Minister of Fisheries. We in Canada are more modest in our desires, but we do want a Deputy Minister of Fisheries who will attend to the fisheries and nothing else.

The Lunenburg fishing fleet earned \$3,500,000—nearly a million dollars more than last year. The amount of fish landed was 247,395 quintals and 103 vessels engaged in the fishery. The catch was slightly less than in 1917, but prices were high, averaging \$14.75 per quintal. Nine schooners were sunk by German submarines on the Banks during August and September, 1918.

UTILIZATION OF FISH WASTE.

Ottawa, January 3.

The problem of securing the commercial utilization of the enormous quantities of fish waste on both the Atlantic and the Pacific Coasts has been engaging the attention of the Council for Scientific and Industrial Research for some months past, and, as a result of investigations conducted under the auspices of a committee headed by Dr. R. F. Rutton, of McGill University, indications now point to the creation this year of important new industries for the recovery of fish waste on both coasts.

The data secured by the research council as to the extent of this fish waste would indicate that at present there are annually about 240,000 tons of fish offal and non-marketed fish allowed to go to waste on the Atlantic coast, and about 60,000 tons on the Pacific coast. The fish oil thus wasted is estimated to be worth about six million dollars at current market prices, while the value of the other potential by-products of the fishing industry, such as fertilizer and stock and

poultry foods amounts to hundreds of thousands of dollars more.

In the Canso fishing district of Nova Scotia, for instance, an investigation conducted by the research council shows that the fish waste, if converted into oils would have a marketable value of about \$424,000 per year. Similarly at other centres such as Prince Rupert, Grand River, on the Gaspe Coast, and Clark's Harbor, N.S., this great economic waste has been going on for years, without any enterprise to commercially exploit this waste food material. It is estimated that about fifteen per cent of the fishermen's catch on the Atlantic Coast now consists of non-marketable or non-edible fish, while in the case of trawlers the percentage runs as high as thirty per cent.

In the United States reduction works have been established at several fishing centres where oils, fish meal, fertilizer and various forms of stock foods are manufactured from fish waste. The industry has undoubtedly great possibilities of successful commercial development in Canada provided proper methods are adopted. The research council has urged upon the Reconstruction and Development Committee of the Cabinet the importance of encouraging commercial exploitation of this undeveloped branch of Canada's fishing industry, and plans are now understood to be under way whereby private enterprise will establish plans this year for the conversion of fish waste into its various commercial uses.

A WORD OF ADVICE TO PRODUCERS OF ATLANTIC FISH.

Ottawa, Jan. 4, 1919.

To the Editor of The Canadian Fisherman:

Dear Sir,—Your editorial in the November issue of the "Canadian Fisherman," entitled "Develop our Fisheries," was very timely. You refer to both the overseas trade and also to the domestic requirements. In connection with the idea of stimulating the home market, it is very true that the Canada Food Board has been of very great assistance, both to the producers and also to the retailers. Viewing the situation from the retailers viewpoint, I see one measure at least by which the producer can do considerable to make the selling of Atlantic fish more popular among the retailer.

Speaking from actual experience gained by many years of handling fish, from the Pacific and from the Lakes as well as from the Atlantic, I state emphatically, that the producers of Atlantic fish have imposed certain conditions, which do not conduce so satisfactory understanding, as should be between producer and the retailers.

I refer to short weights. Now, at the outset allow me to state that I admit that fresh fish must considerably shrink in transit, and the longer the fish is on the way, the greater the shrinkage.

Again, fresh fish from the Great Lakes, also fresh fish from the Pacific also shrink, but the shippers of lake fish and of Pacific fish, have been generous enough to allow at least to some extent, for this shrinkage, and it is very usual to see shipping tags specially endorsed "allow 3 to 5 pounds per hundred for shrinkage."

Out Atlantic producers, or at least many of them have absolutely refused to make any provision for this shrinkage, which results in inland dealers pay-

ing for what they do not receive and also paying express charges on the same.

My contention is, that if the producers of Atlantic fish are not too independent to cater to the great consuming public in the inland centres of this Dominion they must be as generous in their treatment as the producers of Lake and Pacific fish.

There are so many varieties of exceptionally fresh fish that it is not absolutely necessary for retailers to confine their activities to the sale of any particular variety, but I feel sure they will do business where treatment is fair and sell those goods which allow a reasonable margin of profit.

I know of one firm whose sales of Atlantic fish during the past 10 months increased 37½ per cent over the corresponding period of 1917, while the sales of fresh water fish increased 74 per cent in the same period.

To those retailers who do not weigh their fish when received from the shipper, I would suggest that it will at least be worth while to weigh all your fish.

Wishing the "Canadian Fisherman" and also the Canadian fishermen a Prosperous New Year, I remain,

Yours respectfully,

T. W. A. BINNS.

GOVERNMENT FISH.

When the Ontario Government undertook to supply the people of the Province with fish from the northern lakes it was announced that this undertaking was purely for the public benefit, the fish being supplied to the vendors at cost and the retail price regulated. It transpires, however, that the Government has been exporting fish to New York and realizing a handsome profit on the business. That would be all right if there were a surplus which would not be disposed of in Ontario. But such is not the case. For all the fish that the Government can supply there is a steady demand in this Province—and for more, too.—Hamilton Herald.

EXPERIMENTAL FISH CURING ON THE PACIFIC COAST.

The investigations and experiments in curing fish on the Pacific coast, which the U. S. Bureau of Fisheries undertook through the medium of August H. D. Klie in the latter part of September, have been continued. The experiments in salting the Pacific coast mackerel did not yield promising results as the fish were lacking in flavor and off color as compared to the eastern mackerel. Experiments in canning the fish give more promise.

In the latter part of October Mr. Klie went to Seattle in connection with this work, but he has since been instructed to confer with Mr. O'Malley and the commercial interests concerned in regard to the inspection of Alaska herring. The Scotch-cured Alaska herring packed under the supervision of the Bureau's instructors is of high quality and in demand, but certain other packers, through indifference or ignorance, are placing an inferior pack on the market with the probable result of injuring the reputation of all Alaska herring of that cure. It is hoped that there can be devised a plan for inspecting these fish on arrival in Seattle, thus assuring a standard of quality.



CANADA FOOD BOARD'S FISH SECTION BULLETIN



"Fish is the only readily available substitute for the meats so urgently required for export to the starving millions of friendly allies overseas."

LICENSES ISSUED.

The number of wholesale fish dealers licensed in Canada during the year amounted to 1,733. Quite a number of new concerns went into the wholesale fish business during the year.

TO INCREASE CONSUMPTION OF FISH IN ONTARIO.

Mr. E. O. Sawyer, Jr., Assistant Superintendent of the Fish Section has completed a tour of Ontario towns where he investigated the local fish trade, conferred with dealers and municipal authorities, local food conservation workers and women's organizations. From the information which he obtained, an intensive effort to stimulate the consumption of fish in Ontario will be carried on by the Board's Fish Section.

CODFISH CAMPAIGNS.

A campaign to popularize Atlantic codfish will be conducted in the Province of Quebec during January. During "Codfish Week" in Toronto recently, over 114,000 pounds of fresh and frozen codfish was sold. The Board is arranging to start campaigns in favor of Atlantic and Pacific codfish from coast to coast with the hope of popularizing these prolific and reasonably priced fish.

PACIFIC TRAWLING GOOD BUSINESS.

The market for Pacific flat-fish under the Board's auspices is absorbing the catches of the two trawlers now operating. It is expected that two more trawlers will be put into operation shortly. The Canadian Fish & Cold Storage Co., of Prince Rupert, will probably put the steamer "Geo. E. Foster" into trawling, while the Canadian Fishing Co., Vancouver, will fit out the steamer "Canada" for the work.

TORONTO AND BUFFALO FISH PRICES.

The following comparison between Toronto and Buffalo retail fish prices is interesting and shows that Canadians are favored.

	Toronto. cents.	Buffalo. cents.
Mkt. Cod	11	16-18
St. Cod	17½	20
Haddock	12	14
Salmon Q	20	35
Halibut	30	30
Mackerel	18	30
Trout	19	28
Whites	17-19	28
Pickereil	17-19	28
L. Herring	10	16

CERTIFICATES FOR RETAILERS.

The Board's certificates of commendation for sanitary handling and attractive display of fish in retail stores has already been awarded to some thirty stores. All the recipients have expressed their pleasure at receiving certificates and readily appreciate the value of them in building up their business.

FOOD BOARD CHAIRMAN APPOINTED ON TRADE COMMISSION.

Mr. H. B. Thomson, Chairman of the Canada Food Board has been appointed as one of the three members of the Overseas Trade Commission. Mr. Thomson will retain the Chairmanship of the Canada Food Board until such time as the Board is abolished or merged into the Trade Commission. It is expected that fish will play an important part in the overseas export trade.

FOOD BOARD PROTESTS EXPRESS INCREASES IN FISH RATES.

The Canada Food Board has gone on record as strongly protesting against any increase in the express rates on fish of all kinds from any point of production to consuming centres in Canada.

ATLANTIC FISH FILM CIRCULATING.

Owing to the influenza epidemic, the Food Board's Atlantic fish film has been delayed from circulation. The film has now been booked at the various motion picture houses from Winnipeg east and will be shown early in January.

FOOD BOARD LICENSES FOR 1919.

The Canada Food Board licenses for 1919 will be issued shortly. The fees will be charged upon a new system—the same rate applying to all wholesale businesses. The scale is \$10 for the first \$50,000 and \$10 for each additional \$50,000 of business turnover. The scale of fees for retail fish dealers licenses remains as heretofore. All regulations regarding beef and the use of fish as a substitute are still in effect. An important exception in wholesale fish licenses is that no additional charge for branch is made as fee is based on total turnover for the year.

CAN PRICES LOWER.

New York, Jan. 2.—American Can Co. announces new prices for packers cans effective to-day, running 2½ to 6 per cent lower than the prices established July 1st, 1918.

FISH CURING

By J. J. COWIE.

IV.—ALEWIVES.

Curing in Pickle.

First-salting.—The fish should be thoroughly salted into perfectly tight clean receptacles—usually puncheons—immediately after being caught.

One method of salting, which is most common, especially where space is limited, is to fill a tub or basket of one and a half bushels capacity, with fish, and empty it into a puncheon, while as much salt as a snow shovel will hold is scattered evenly amongst the fish as they drop into the cask. As much more salt is then thrown on top of the fish in the cask, and the whole stirred with a pole until fish and salt are well mixed. Each tub or basketful is treated in this way until the puncheon is full.

Another method, which perhaps is the best for the salting of alewives, as well as herring in bulk, is to dump the fish on a clean floor, turn them over with shovels, and as they are being turned over to throw salt amongst them; using the same quantity as in the other method, namely two snow shovels full to a basket of fish. This insures an even distribution of salt.

It would be well to further slightly sprinkle the fish as they are being shovelled into the puncheon.

After the first basketful, or its equivalent, is placed in the puncheon, half a pailful of pickle should be poured in gently in order that the fish may start making pickle quickly.

A cask of the size of an ordinary hogshead filled with alewives, should take at least a sack and a quarter of salt, about 210 lbs., to effectively cure the fish.

Length of Time for Curing.—At the end of 12 or 15 days, according to whether the fish are small or large, the fish may be drawn from the puncheons, and packed into barrels.

A barrel of the same type and capacity (200 lbs.) as that described for split herring in a preceding article, is used for packing and marketing alewives in.

Grading.—While the fish are being drawn from the puncheons to be packed, they should be separated into

two grades and packed separately. The larger grade should consist of fish not less than ten inches, and the smaller grade of fish not less than eight inches as measured from the extremity of the head to where the flesh and tail-fin meet. Both grades should be bright in colour, and free from rust.

Packing.—Before packing is begun, the barrel should be thoroughly rinsed with clean water inside. This tightens it up, and prevents the pickle from leaking away as it forms after the fish are packed.

In packing, the fish should be laid side by side in tiers back up. Each tier should be completed by placing two fish across the heads of those in the tier, and then salted evenly by scattering over it as much salt as a man's two hands placed together will hold. Each successive tier should be packed transversely to the one underneath.

When the barrel is half full, and again when it is full, the fish should be pressed down. To do this properly there should be placed on top of the fish a circular piece of wood on which the packer should stand for two or three seconds. A circular press may be readily made by nailing two barrel heads together, and reducing its circumference sufficiently to allow it to slip easily into the barrel.

The filled barrels should stand for a week, in order that the fish may settle down, after which as many more tiers as are required to completely fill the barrel are added, and the head put in and made tight.

Pickling.—As much pickle as the filled barrel will take should be poured in through a bung hole. This pickle may be either the original pickle taken from the puncheons, provided it is not sour or too weak; or a mixture of half original pickle and half freshly made pickle. The latter is to be preferred.

Smoking of Alewives.—Alewives may be made into kippers and bloaters by exactly the same methods as have been described in the preceding article for the smoking of herring.

ONE ON HUGHIE.

Major Hughie Greene, Director of Fish Supplies for the Overseas Forces, was the victim of a rather odorous incident in England recently. A case of fish had gone bad at one of the camps near London and orders were given for it to be sent to Major Greene's warehouse for examination. The orderly interpreted his instructions as being to forward the box to the Major's "house" and the fish was sent to Hughie's apartments and placed therein by the janitor. Hughie was out of town at the time—it was the month of August—and after reposing in his rooms for three days it did not require any sign-board to direct one to the Fish-monger General's quarters. Hughie admitted that it took a week's airing and a few gallons of disinfectant to remove the odor, while it took months to convince British staff officers and his friends that it was an accident and not a secret penchant for antiques in the fish line.

NEW ENGLAND FISH COMMISSION IN CANADA.

The following members of the Massachusetts Legislature, Senators G. F. Hart and C. D. Brown, Representatives J. Weston Allan, J. D. Bentley, F. A. Manning, A. L. Whitman, C. Bootman, Sergt.-at-Arms J. Beatty, and Clerk of the Commonwealth G. A. Hoyt, visited Canada early in December to investigate fish conditions in inland centres. The delegation visited Toronto first and were given an insight into the operations of the Ontario Government Fisheries by Mr. S. L. Squires and Hon. Finley McDiarmid.

In Montreal, the Commission were the guests of the City Council and the Canadian Fisheries Association represented by President Brittain, and Directors Byrne, Paulhaus, O'Connor and Spooner of the city and Mr. H. B. Short, of Digby, N.S.

Much information regarding the Canadian fish trade was given the Commissioners and Representative Allan stated that he had discovered that Canadians were selling sea fish at lower prices than in Massachusetts.

Report of Canadian Trade Commission to Great Britain, France and Italy, 1916

Canadian Fish Markets Abroad.

Canada produces the following fish:—Cod, pollock, hake, haddock, halibut, causk, skate, flounders, lobsters, salmon (five kinds, known as sockeye, spring, coho-pinks, dog salmon, or chum), mackerel, herring, alewives and sardines.

Canada also has the Great Lake fish known as white fish trout, lake herring, pickerel, pike.

The value of the fisheries of Canada annually before the war was from \$33,000,000 to \$35,000,000.

The fish chiefly exported from Canada to Europe are either salted and dried (mainly codfish), or canned.

For a number of years quantities of salmon from the Atlantic Coast, and salmon and halibut from the Pacific Coast have been sent to Great Britain in a frozen condition. This trade will develop more in the future, though it is not likely to spread to any great extent to other kinds of fish. Salmon and halibut are comparatively scarce in Europe. There is, however, in Great Britain, some prejudice against frozen fish. Since the war broke out transportation facilities have militated against the development of the frozen fish trade.

At the present time, if transportation facilities and rates were reasonable, it would appear feasible to ship large quantities of fresh fish in frozen condition from the Atlantic Coast to Europe.

There is room for great expansion of trade with Great Britain and other European countries in canned fish. There is every prospect that this form of food will enjoy greater favor in the future. This industry could be developed in Canada to any extent, as the production could keep pace with any demands made upon it. At the present time, canning of fish is largely confined to salmon, lobsters, sardines, and to a small extent, large herrings, cod and haddock. The demand for canned salmon in Great Britain and France is growing rapidly. Up to a year or two ago there was very little inquiry for other than sockeye salmon, but now there is a good demand for cohoes and pinks.

The following is a statement of the exports from Canada to Great Britain, Italy and France for the fiscal year 1915:—

	Great Britain.	Italy.	France.
Dried Cod, etc.	12,411 cwt.	52,055 cwt.	.....
Green Salted Cod, etc.	13,360 "	.....	.....
Pickled Herring	30,651 bbls.	.....	.....
Smoked "	4,950 lbs.	.....	.....
Canned "	590 cwt.	.....	5,500 cwt.
Lobster, canned	2,815,158 lbs.	.....	1,396,909 lbs.
Salmon, fresh	854,429 "	.....	.....
" canned	25,385,101 "	.....	1,188,816 lbs.
" smoked	1 cwt.	.....	.....
Halibut, fresh frozen	1,940 cwt.	.....	.....

It must not be forgotten that Newfoundland is a great competitor with Canada, in the supplying of European markets with dried fish.

The Commission has noted that every dealer in Canned Goods who gave evidence expressed the strongest desire to give Canada a preference. All were in favor of tins and cases being stamped "Canada."

The imports of all kinds of fish into Great Britain are roughly \$20,000,000 a year. Until recently no attempt was made by Canada to export fish other than canned.

Codfish and Other Dried and Salted Fish.

The outlook for Canada's trade with the United Kingdom is not encouraging. The hundreds of British craft, their ports only a few miles off the fishing grounds, and the cutting off of the enormous German demand for pickled herring, will make it most difficult for Canada to sell dried cod, pickled and smoked herrings in the British market.

Before the war, selected salt cod sold at £16 to £20 per ton, and in 1916 they were £25 to £30 per ton—less than seven cents per pound. Herrings are supplied so cheaply along the Scottish coast that it seems useless for Canada to try the British market.

Even in the fine qualities of boned salt cod in small boxes, we could not hope to do much trade except by a costly advertising campaign. It might be possible to place the boneless cod, small boxes, and the 100-lb. boxes of skinless cod, as described on page 90, but it would be an experiment.

Canada might help to supply cargoes of cod for Britain's export trade to the Mediterranean. These fish cargoes are from 300 to 500 tons. The fish are packed in casks of about 448 lbs., sizes of fish are from 12 to 18 inches long; large sizes are 18 to 30 inches long, packed each size in separate casks.

Digby Chickens.—These are a fine quality Bay of Fundy smoked herring. They are known in Glasgow, Liverpool and a few other places, but are slow sellers. These fish are packed in small boxes of 4 lbs. net, about 30 fish to a box. St. John, N.B., and Halifax, N.S., are the principal points of origin.

Frozen Fish.

As has already been reported by the Canadian Trade Commissioners in England, the demand for Canadian frozen salmon and halibut is steadily increasing. Unfortunately it has not been generally known that this

class of Canadian fish is procurable during the winter months. This is due chiefly to the fact that English dealers have sold the Canadian fish as "English,"

with the result that the consumers' demand ceases as soon as the English fresh fish season is over. Certain difficulties stand in the way of launching a general advertising campaign in the interests of Canad an fish. Some means, however, would appear to be necessary to secure to Canadian producers the market which the taste of the British public naturally affords.

Vancouver and Prince Rupert ship halibut in 300 lb. cases and salmon in 260 lb. cases.

Dealers in Hull, Glasgow, and other cities speak highly of the quality and style of packing of Canadian salmon.

An inspection custom prevails which presses unduly on imports of frozen salmon into the United Kingdom. The Board of Fisheries decreed that all cases of Canadian fresh salmon landing in Britain between September 1st and February 1st must be opened and examined by the officers of the Fishmongers' Board. An officer must go to Glasgow or any entry port, open the cases, examine the fish and place a seal on each individual fish, as a proof that it is of Canadian origin. The Glasgow Fish Dealers' Association complained of cost, etc., of this inspection, as follows:—

"Apart from the financial cost, the handling of frozen fish while in cold storage in the way of opening the boxes, unpacking the fish for sealing, and again wrapping up and packing the fish, tends to a rapid deterioration of the goods, and on this account alone is open to grave objection and should be avoided if at all possible."

The London Fisheries Board replied May 25th, 1916: "The suggestion made by the Glasgow Wholesale Fish Dealers' Association, that the packages and not each individual fish be sealed, would not protect the retail fishmonger when the packages are broken at the market and the fish sold separately. A whole case of fish is very seldom bought of one fishmonger and in practice he prefers to have the proof of origin and the protection afforded by the seal affixed to each fish.

"These conditions do not apply to fish entered for re-exportation to the Continent. It is then sufficient if the case itself be sealed.

"The opening of the cases and the separate sealing of each fish necessarily involves some addition to working expenses, but the total cost, including the low charge for sealing of one penny per fish, cannot appreciably affect the profits of the consignment, nor is it to be anticipated that the handling of the fish would affect its quality or lower its market value."

It has been suggested that fish packers in Canada have a small metal shield $\frac{1}{2}$ inch long, marked "Canada" attached to each salmon when packed. These shields, made in 50,000 lots, would cost very little. This would save the penny paid in the United Kingdom, and would avoid the opening of cases in Britain.

The following extract from a letter received by this Commission is of interest:—

"We think the suggestion made, namely, that a metal disc might be affixed to the salmon by the packer in British Columbia, might meet all the needs of the case, and we trust you will be able to have the matter put on a satisfactory footing with the British authorities so that these sealing restrictions may be done away with."

The Commission thinks it wise to remove all restrictions that are vexatious, and hopes the British Colum-

bia Government will consider the suggestion made in the above letter.

There is a great future for the trade in canned and fresh salmon with Great Britain, France and Italy, and every effort should be made to facilitate trade.

While the Commission was in London, the question of supplying frozen fish to the British Army was under consideration.

One of the Commissioners, who is well informed in the subject, took steps to help remove the objection of the military medical authorities.

It is gratifying to note that since the return of the Commission, a large contract has been placed by the British War Office for a supply of Canadian frozen fish. It is to be hoped that a very large trade may be developed after the war in Great Britain and elsewhere.

Canned Fish.

English dealers expressed a definite favorable opinion as to the good quality of Canadian canned salmon. One firm, which may be taken as representative of the English trade, stated that they "only buy Canadian packed salmon and have had no complaints." . . . "We generally buy fifty per cent sockeye, fifty per cent pinks."

Sardines.—The same firm said "We cannot sell the kind in mustard. We buy the other kind in oil." . . . "Must not be over four inches long, and have key tin." This firm complained that "some Eastern Canadian kinds of sardines are inferior in quality and style." Another firm said "We prefer the key sardines. Canadian fish are not small enough. They are not clean and the oil is poor. . . We prefer 8 oz. tins, not 16 oz."

Canadian exporters of sardines should get full information on the legal definition of "sardines." There is a good market, as the imports are \$3,500,000 per annum, the countries of origin being Norway, France and Portugal. Much money is spent on advertising, and competition is keen.

Canned Herring.—A dealer in Birmingham said that his city could distribute 30,000 to 40,000 cases per annum. The tins should be oval, the fish six to seven inches long. This dealer now buys in Norway. The cases should be 100 tins of half-pound size.

Canned Lobsters.—A dealer in Liverpool, who is prominent in the trade, stated that he "buys lobsters from Prince Edward Island, one-quarter pound, one-half pound, and a few three-quarter pound. The quality does not improve and is not equal to the Nova Scotian." He complained about the "blue shade" in Prince Edward Island lobsters, claiming to have had some in late arrivals. From him and others the Commission learned that large quantities of canned lobsters were imported from Eastern Canada and reshipped to France. One Liverpool firm stated that "lobsters are all right, no blackness in tins." Japanese crabs, neatly canned, are selling freely in England. They are cheaper than Canadian lobsters. It should be especially noted that all tins containing fish should bear the word "Canada."

Fish Oil.

Notwithstanding her large fishing fleet, Canada is behind Norway, Newfoundland and even Japan in supplying the United Kingdom with fish oil. Since 1913 Norway and Japan have very much increased their exports of fish oil to the United Kingdom, but Canadian exports have decreased.

The Board of Trade returns indicate that large quantities of fish oils are received from Newfoundland than

from Canada, due probably to the former's exports of seal oil.

Several buyers of cod liver oil were recently introduced to a firm in Nova Scotia. Prior to the war supplies were obtained largely from Norway, but a great shortage has accompanied the conditions of war. Newfoundland has exported large quantities during the last eighteen months to the United States and Great Britain. It is a trade worth the attention of Canadian producers, but it would have to be organized on a proper basis so as to ensure a product acceptable to the medical profession.

FRENCH MARKETS.

Lack of ocean transportation facilities has doubtless caused a decrease in Canada's exports of fish to France. There have been in the past few years some fluctuations which demand attention. The decrease in our fresh salmon sales to France since 1911 has been considerable. During 1914 our sales of canned lobsters to the United Kingdom increased slightly. Fresh salmon exports from Canada to the United Kingdom increased 60% over 1913 exports, and those of canned salmon were more than double what they were in 1911, 1912 and 1913. This proves that the United Kingdom importers were getting the trade that Canada was losing in France.

Cod Fish.—As shown by trade returns, Canada does not sell any cod fish to France. The supply of this fish comes almost entirely from the French fishing fleet, one-third of which seeks the shores of Iceland, and the other two-thirds the Newfoundland and St. Pierre shores.

Boneless Fish.—Eastern Canada has, during the last twenty years, developed an industry in boneless codfish for which we might find a market in France. This commodity is packed in small wooden boxes.

Canadian fish dealers, in order to secure the French trade, should pack this boned codfish, and other boned fish, in small wooden boxes of 1 kilo (equal to 2.20 lbs.) 3 kilos, and 5 kilos.

The Commission found that dealers in France apparently know nothing about these clean white boned codfish.

Skinless Codfish.—These are packed in wooden cases of 100 lbs. net. The fish are well cured by the usual pickle curing, and sun-dried afterwards. The coarse, dark skin is removed from the napes and the fish look bright and clean, lying flat in the wide boxes. If these fish were cured a little more dry, and shipped by quick steamers, they should find a market in France from October to April.

Haddock, Hake, Pollock.—If seeking a market for these fish in France, Canadian packers should not try to sell them as "Codfish," but as a second quality fish. They should be boned and put up in boxes of one kilo, three kilos and five kilos. On all sizes of boxes the word "Canada" should be prominent. The boxes must not be marked "Codfish" but "Pure Fish." The weight and packer's name should be carefully stated. Samples should be sent first to responsible agents in the larger cities.

Skate, Flounders.—These fish are to be found for sale in French markets and are often served in the higher class restaurants, etc.

Pickled Herring.—The market for Canadian Pickled Herring in France is not likely to be large. France

does not buy fish to any great extent, and further, large quantities are obtainable in the English Channel and the North Sea. It might be, however, that if Canadian dealers would pack good Eastern Number 1 Herring in sound barrels, bound with iron hoops, and would forward samples to French agents, a market might be developed. One of the difficulties so far has been that the Canadian barrels and half-barrels made from spruce wood have not been proof against leakage.

Kipperd Herring in tins might also be sold.

Smoked Fish.—We doubt if fish that are smoked in the ordinary way could stand the summer weather of France, but for shipment in the months of November and December it is possible that smoked fish, kippers, bloaters, etc., and even smoked salmon, might find a sale in the French market.

Smoked Herring.—Eastern Canada has been putting up for many years large quantities of small herring in thin board boxes. These fish count from 20 to 25 to the box, and weigh net about one kilo—2.20 lbs. They are dried hard, and in ordinary climates will keep for three to six months. We would suggest that dealers place these on the French market. October or November would be a good time for shipment. The small boxes of one kilo might sell; the larger ones of 10 kilos would be difficult of sale. They should be smoked fairly dry and hard, so as to require very little cooking. Boxes should be stamped "Canada"; the letters "Canada" about one inch long. It is best to have the packer's name on each box.

Salmon, Lobsters.—France has always bought enormous quantities of canned lobsters, and while canned salmon are sold only in very limited quantities, the sale has greatly developed of late, the article having found favor in the taste of the consuming public, since meats and other commodities have become so dear.

Lobsters sell mainly in flats $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and 1 lb. tins. Before the war a good market was found for lobsters in Russia, Belgium and Germany, which countries bought mainly the choicest grades. The better grades come from the south shore of Nova Scotia and also from Newfoundland, but lobsters of Newfoundland origin do not interest the French market. That colony has no special treaty with France, therefore the lobsters of Newfoundland origin pay the maximum duty while Canadian fish enter at the minimum duty.

It is claimed that these south shore Nova Scotia lobsters are a little larger than those coming from Prince Edward Island, and the New Brunswick coast on the Gulf of St. Lawrence. The tin plate should be of the best quality and well coated, so as to prevent its being tarnished by sulphate of iron, or so called "smut" which sometimes develops within the can.

Agents in France state that all cases of lobsters and salmon must be marked in four-inch letters "Canada." Each can of tinned fish must also be stamped "Canada" on the cover of each tin, letters to be not less than 7 millimetres (of $\frac{1}{4}$ inch) long. This stamping of "Canada" on tins is required for fish only and not for lobsters, the latter being considered as "Crustaceae" to which the stamping law does not apply.

Cases are sometimes broken. It is advisable to have them bound with iron stripping rather than nails. Some dealers use a machine which draws the iron stripping carefully over the box, setting it down into the wood. This makes a perfect box and prevents pilfering and breaking.

Dealers complain that sometimes certain lines of

lobsters contain too much liquid. Lobsters should be packed, whole tail at bottom of tin, whole claws on the top, and some of the small meat in the centre.

The duty on Canadian lobster and salmon is 25 francs per 100 kilos, if the goods come direct to France. If they come to France via an English or other European port, the duty is 28.60 francs per 100 kilos. In 1915 and 1916 large quantities of salmon and lobster were shipped via New York to France. The Government, owing to the suspension of direct steamship services between the Dominion and the French ports, does not charge the duty at the rate of Frs. 28.60 via New York, as the law is construed to apply only to a second European port. But the shipment via New York being contrary to the provisions of the French tariff law regarding direct imports and minimum tariff a special permit has to be obtained by the French importer for each individual consignment. In shipping via New York, dealers have to supply, besides the usual certificate of Canadian origin, legalized and vised by the French Consul at the point of shipment in Canada, a special certificate made out at New York, attesting that the goods, as set out with full particulars as to marks, quantities, name of steamer, etc., have been transhipped at New York "in transit" under Customs' supervision and without having sustained any other handling at New York. This declaration has to be legalized by the French Consul at New York. The certificates must also indicate the name of the shipper, and of the buyer or consignee in France.

Cases of 48 1 lb. tins of salmon or lobsters weigh about 32 kilos gross, or 28 kilos net, including weight of tins.

The paper lining of tins of lobsters is most essential. It should be good, pure, vegetable parchment paper, so as to prevent acid from affecting the tins.

Except in two towns in France, there is an "octroi" duty in each city. This "octroi" on fish in Paris is nearly as much as the original duty of 25 francs per 100 kilos. As all these duties are specific and not "ad valorem" the tendency is for buyers in France to take the best goods and not the poor stock, as the duty is the same on each.

The dealers in Paris who sell out to the small stores make many losses by "swells" and by "black meat." A wholesaler in France has to guarantee the quality of his canned goods, sometimes from July to September, when he receives them, until the following February or March. The importance, therefore, of having the goods put up in the best way possible as to paper lining, quality, strength and condition of boxes, etc., is obvious.

All dealers prefer buying c. i. f. Havre or Bordeaux. Of the five kinds of salmon, not many of the high grade "Sockeye" have been used since the war, as the original cost is too high. "Cohoes" and "Pinks" are the largest sellers. Just now, on account of the war, the "Pinks" are selling well. It is thought that when peace is arranged, a large demand will spring up for "Cohoes." Dealers report that Canadian salmon are usually good stock. The half and one lb. "Pinks" sell the best. There is considerable demand for "Cohoes" in ordinary years. A Paris dealer bought in July, 1916, 10,000 cases "Pinks" and 5,000 cases of "Cohoes" for autumn delivery.

Canadian dealers must remember that there are no salmon at all canned in France, and with ordinary care and consideration for French needs, trade should rapidly increase.

The French trade prefers a firm salmon; any that are at all soft tend to lower Canada's reputation among the dealers in canned goods.

Sardines, Sprats.—Sardines are, of course, canned in France, but best quality only, while large quantities of sardines of medium and cheap grades come from Spain and Portugal. Sprats come from Norway, the latter being slightly smoked and going by the name of "Brislings."

If the Canadian canners desire to offer true sardines, they should print on the label the words: "Sardines, Poissons a l'Huile." If the fish are not true sardines, but some other kind of fish, then they should be marked simply "Poissons a l'Huile"; omitting the word "Sardines." Otherwise, the goods will be stopped by the Customs authorities and heavy fines may be imposed on the importers for fraudulent trade description. All canned sardines, sprats or fish in oil must be stamped in the lids or bottoms of cans in at least 4 millimeter characters: "Importe due Canada."

The "key" sardine tin is much liked in France, especially that kind of which key rolls up the top or cover of the box and leaves the fish completely exposed. The key needs to be laid in a groove on the tin, and then it will come in with the weight and not pay a special duty.

Smoked Salmon.—There is a special high grade, sliced, which sells at a good price in $\frac{1}{4}$ and $\frac{1}{2}$ lb. tins. These must be put up in first class olive oil. They are also sold in small tinplate drums that will hold about 3 kilos (6 $\frac{3}{5}$ lbs.) It is perhaps not advisable to make consignments of smoked salmon, but it would be worth while to send samples to responsible agents. Shippers of canned goods should be careful to familiarize themselves with the French laws concerning duties, stamping tins, certificates of origin, etc., before putting their goods on the French market. For this purpose we append extracts from the law:

"Stamping Regulations of Canned Goods. The Act July 11th, 1906, prescribes that all foreign canned sardines, vegetables and plums coming into France, should bear the name of their country of origin stamped or embossed on the cover or bottom of the tin in letters of at least 4 m/m long."

A bill in amendment of above was adopted by the Chamber of Deputies and the Senate on May 13th, 1913. This amendment makes applicable to all foreign canned fish coming into France, the stipulations of the Act of July, 1906. During the discussion, it was pointed out that canned molluscs or crustaceans (such as oysters, lobsters, langoustes and crabs) would not be subject to the terms of the Act, as they were not fish and were classified differently in the French Customs tariff.

At the request of the Dominion Government, Canadian canned salmon was exempted from the application of the Act until June 29th, 1914. Canned lobsters and other crustaceans have never come under the operation of the Act.

FRENCH TARIFF ON FISH.

Section—	General Minimum	
	per 100 kilos.	per 100 kilos.
No. —Fresh Salmon Trout.	40 fes.	25 fes.
45 —Pike, Carp, Eel	12 fes.	8 fes.
No. —Dried Cod	60 fes.	48 fes.
46 —Salted or Smoked Herring.	20 fes.	15 fes.

No. —Canned, Pickled or other-
47 — wise prepared 50 fcs. 25 fcs.

No. —Lobsters, fresh 40 fcs. 15 fcs.
49 —Lobsters 40 fcs. 25 fcs.

Canada has the benefit of the minimum tariff. The Commission recommends that the French Government be asked to make the duty on canned lobsters the same as that on fresh lobsters.

ITALIAN MARKET.

Codfish constitutes the bulk of Italy's fish imports of about seven million dollars per annum. Norway is the principal source of supply, furnishing over one-third of the total. Canada sends somewhat more than one-quarter. Denmark, Great Britain, France and the United States make up the balance.

Canada has an excellent chance to compete with Norway, since while the shortness of the ocean haul is in Norway's favor, the transatlantic cod keeps six or eight months, whereas the Norwegian cod is said to deteriorate rapidly. Again, while it may be that a part of the imports of cod credited to Canada originate in Newfoundland, the Italian market does not favor the dark Newfoundland pack, but prefers the Copenhagen style, which is much like Eastern Canadian pickle-cured medium, cod, i.e., pickle-cured, then pressed and dried slightly.

The dealers in Northern Italy are accustomed to buy haddock and cod, soft-cured, in bundles of 100 kilos, wrapped in sackings and firmly corded. The fish are 14-16 inches long. The southern market, as represented by Naples, prefers the stiff, board-like curing.

Canada's exports of fish to Italy may be developed to include other varieties than cod. Britain brings in many cargoes of Western Hemisphere fish, which are at once shipped out to Italy. Britain sent Italy in 1913 some 5,000 tons of dried herring, valued at nearly \$2,300,000.

Given direct steamship communication with Italian ports, such as Naples or Genoa, Canada's exports should rapidly increase. This would be the case particularly if other Mediterranean ports are visited. Spain and Portugal both import considerable quantities of codfish, the former bringing in, in 1913, 54,000 tons.

OTTAWA END OF CANADIAN TRADE MISSION IN LONDON ORGANIZED.

To co-operate in Canada with the Canadian Trade Mission in London, which was created with a view to securing orders for Canadian products for reconstruction purposes in the devastated areas of Europe, a body designated as the "Canadian Trade Commission" has been created.

The commission consists of three members: Sir Charles Gordon, of Montreal; Mr. Charles B. McNaught, of Toronto; and Mr. H. B. Thompson, of Victoria, B.C. Sir Chas. Gordon was formerly vice-chairman, Imperial Munitions Board with an office in New York; C. B. McNaught is chairman, Canadian War Trade Board, and H. B. Thomson, is chairman, Canada Food Board.

NOTES ON SEA FISHING RESULTS FOR NOVEMBER.

Rough weather greatly interrupted fishing operations on the Atlantic during November. A heavy easterly gale about the 14th wrecked or damaged many boats, wharves, and much fishing gear, especially in the eastern districts of Nova Scotia.

The quantity of cod, haddock, hake, and pollock landed was 87,311 cwts., against 100,694 cwts. for November, 1917. The catch of cod was 328 cwts. greater, but that of haddock, hake, and pollock was 13,711 cwts. less. Most of the shortage was in haddock.

There was an increase of over 12,000 cwts. in the herring catch, and a similar increase in the mackerel catch all over the Atlantic coast. The sardine fishery in the Bay of Fundy was exceptionally good, and amounted to 65,025 barrels for the month, against 23,965 barrels for the same month last year.

The new lobster fishing season opened in Charlotte and St. John counties, New Brunswick, on the 15th of the month. The catch amounted to 1,268 cwts., against 1,080 for the same period in the preceding year.

Scallops to the extent of 2,000 barrels were taken in the Chester bay district of Nova Scotia, against 1,000 barrels for November, 1917.

The catch of oysters amounted to 3,979 barrels, against 4,311 barrels. There was an increase of 269 barrels in New Brunswick, but a decrease of 601 in Nova Scotia and Prince Edward Island.

Stormy weather on the Pacific, and the effects of influenza amongst the crews caused most of the halibut boats to be tied up at Prince Rupert during the month. Consequently, the British Columbia halibut catch only amounted to 7,084 cwts. against 13,030 for November last year.

The herring catch in British Columbia was about 60,000 cwts. short, while the catches of salmon and black cod was somewhat less. Of flat fish there was an increase amounting to 2,771 cwts.

The total catch of sea fish in the whole of Canada during the month realized a value of \$2,284,163 at the point of landing. In November last year the value was \$2,145,760.

One man on the coast of Victoria county, N. S., and fifteen men on the west coast of Vancouver Island lost their lives during the month, in connection with the fisheries.

BRITISH MINISTRY OF FOOD CANNED SALMON PRICES.

The prices fixed by the British Ministry of Food for the British Columbia salmon pack commandeered by them is as follows:

	Talls.	Flats.	Half flats.	Ovals.	Half flats.
Soockeyes	\$14.50	\$15.00	\$16.00	\$16.00	\$17.50
Red Springs	13.00	13.50	14.00	14.00	....
Cohoos	11.50	12.00	13.00	....	....
Pinks	8.00	8.25	9.50	....	....

The above prices are for labeled cans. Unlabelled cans are subject to a reduction of 15 cents per case for one pound and twenty cents for half pound cans. All prices are subject to the usual trade discount of 2½ per cent and one half of one per cent in lieu of the usual ten per cent examination.

Sea Fisheries of Europe---Norway

No European country has succeeded so well as Norway in developing its sea fisheries in the last generation. It has many natural advantages, the coast line is of great extent, measuring, without taking account of fjords, bays, indentations or islands, about 1,600 miles, from the Russian frontier in the north to the Swedish frontier in the south; it extends through nearly 14 degrees of latitude and 27 degrees of longitude; it is everywhere, except in the south, washed by the warm water of the "Gulf Stream" (the Norwegian Branch of the Atlantic Drift) which pours northwards and eastwards along its coast, carrying some of the warmth of the tropics into the Arctic regions, so that no part of the sea is frozen in winter; the coast is penetrated by innumerable fjords and girdled with a chain of islands, large and small ("skjaergaard") and is washed in its northern part by the Arctic Ocean, in the south by the North Sea and the Skaggerack, and in the west by the North Atlantic. The natural conditions are thus very favourable for the development of fisheries. Moreover, the land is comparatively sterile, and a large proportion of the population has been compelled by the force of stern necessity to seek their livelihood in the sea, either throughout the year, or, more commonly, only during part of it, the majority following agricultural pursuits as peasant-farmers during the rest of the time.

One might expect from the natural features and the economic conditions to find the fisheries rather different from those in the countries farther south, and such is the case. There is very little deep-sea fishing, and but a small steam fleet; there is no trawling, except for a deep-water prawn; there is no great drift-net fishing, though the herring fisheries are of much importance. Nevertheless, and notwithstanding the small population, the Norwegian catch is the second largest in Europe (excluding the Mediterranean) and third in value. The Bulletin Statistique gives the following as the catch in thousands of cwts. and thousands of pounds:

	1907.	1908.	1909.	1910.	1911.	1912.
Cwts.	9,162	9,907	12,030	11,450	13,641	16,019
£'s	2,430	2,258	2,429	2,758	3,133	3,096

In the period the quantity increased by 74.8 per cent, and the value by 27.4 per cent, the increase in quantity being more than in any other country, except Russia, where the figures are undoubtedly wrong. The development of the Norwegian fisheries has been due

to (1) thorough and detailed assistance, directly and indirectly, by the State; (2) the application of scientific and technical knowledge and a close study of foreign fisheries; (3) the introduction and general use of the internal-combustion engine in the fishing boats—specially adapted for the nature of the Norwegian fisheries; (4) the introduction of new, and the improvement of old, methods of cure, notably the creation of the "sardine" industry, and (5) the exceptional energy and capacity of the Director of Fisheries, Dr. Johann Hjort, who is a scientific man with a business head. The chief fisheries are (1) those for cod and members of the cod family; (2) those for herring, mackerel and sprats; (3) a "bank" fishery of much less importance; (4) whaling and sealing; (5) lately developed, a fishery, especially for herrings at Iceland. The two first are of overwhelming importance; in 1915, the cod fisheries provided 50.01 per cent of the total value, the herring, mackerel and sprat fisheries 44.88 per cent (herrings, 35.67 per cent), and all the others 5.11 per cent.

The Fisheries as a Whole.

The total number of fishermen engaged in 1915 was 88,298, of which 21,349 were fishermen pure and simple, 34,370 pursued fishing as their chief occupation, and 32,579 as a subsidiary occupation; in addition 17,538 persons were employed in the curing and treatment of the fish, 6,609 in the tinning, fish-oil and guano factories, and 1,930 in the whaling industry. The men, of course, engage in different fisheries at different seasons, and the following figures show the number so employed for a number of years:

Year.	Cod Fisheries.	Fat Herring.	Spring Herring.	Mackerel.
1876.....	62,757	48,831	?	3,436
1880.....	80,441	35,130	?	3,719
1890.....	89,283	29,804	?	3,335
1900.....	82,098	20,705	?	2,741
1905.....	83,286	8,492	?	9,516
1910.....	88,144	27,024	22,560	5,400
1913.....	99,659	17,693	17,015	3,073
1915.....	92,865	20,870	11,955	4,489

The fishing fleet is large in numbers, but few of the vessels are of any size, being adapted for the fjord fishings and those within the "skjaergaard," or island belt. The following shows the figures for some years:—

Year.	Decked Vessels				Open Boats.				Total.	Grand Tot.
	Steamers.	Motor.	Sail.	Total.	Motor.	Dories.	Others.	Total.		
1906.....	176	647	3,753	4,576	....	....	....	....	....	....
1907.....	..	....	....	....	....	....	....	....	....	....
1908.....	195	1,483	3,861	5,539	153	5,484	....	....	....	....
1909.....	180	1,736	4,255	6,171	238	5,883	44,399	50,520	56,691	56,691
1910.....	183	2,407	3,779	6,369	505	7,066	45,158	52,729	59,098	59,098
1911.....	182	3,296	3,033	6,511	872	7,711	50,082	58,665	65,176	65,176
1912.....	184	3,925	2,612	6,721	1,451	7,339	49,195	56,985	63,706	63,706
1913.....	205	4,405	2,417	7,027	2,092	7,390	51,981	61,363	68,390	68,390
1914.....	210	4,937	1,986	7,133	2,471	8,238	54,683	65,392	72,525	72,525
1915.....	206	5,475	1,228	6,909	2,871	8,116	41,328	52,315	59,224	59,224

The table shows the common changes which have taken place in most European fisheries, but the sailing boats have been replaced by motor-boats, and not by steamers. The number of motor-boats in 1908 was 1,636, while in 1915 they numbered 8,346, and they continue to increase. The steamers are small, mostly under 100 feet, of steel or wood, principally engaged in the "bank" fishery or at Iceland, usually eeking out a more or less precarious existence by towing vessels or fishing boats, or carrying cargoes, as herrings to Stettin. They belong mostly to fishermen—and,

indeed companies are scarce in Norway. The fisheries are individualistic. The value of the boats rose from £1,507,000 in 1908 to £2,915,000 in 1915; in the latter year the value of the gear was £1,430,000, while the value of the curing houses, tinning and other factories, etc., was £1,467,000, the capital sunk thus totaling about £5,812,000.

The aggregate yield of the fisheries is shown in the following table, quantities in thousands of metric tons (of 1,000 kilogrammes) and values in thousands of kroner (pre-war exchange equal to 18 kr. to £1 stg.):

	Norwegian Waters.		Foreign Waters.		Total.	Value of Whale and Seal Catch.		Total Value.
	Tons.	Kr.	Tons.	Kr.		Kr.	Kr.	
1906	328,550	34,872	24,919	2,663	353,466	37,537	4,833	42,368
1910	496,750	43,577	18,771	2,172	515,521	45,749	17,915	63,664
1913	562,757	50,959	19,472	2,809	582,229	53,768	37,386	91,154
1914	577,124	59,272	21,208	2,577	598,588	61,849	36,168	98,017
1915	544,720	84,878	12,774	2,416	557,494	87,294	31,066	118,360

The "foreign" waters comprise Iceland, the Faroes and the North Sea. The aggregate value advanced from £2,354,000 to £5,064,000 in 1913 (before the war) and to £6,576,000 in 1915. In 1915, and partly in 1914 values were much higher owing to the war-demand in Germany; this influence was still greater in 1916, for the official estimate of the total value of the fish landed in that year was no less than 180,000,000 kroner, or £10,000,000. Last year, however, and still more in the present year, there has been a sad decline, owing partly to the measures taken to restrict exportation to Germany, and partly to the risks at sea.

The Cod Fisheries.

This fishery is carried on mainly in the northern part of the coast, north of about 67 degrees latitude in the early months of the year—in the Arctic winter, tempered by the Gulf Stream. Two fisheries are distinguished, that for full-sized spawning fish ("skrei") and that for smaller cod ("torsk"). The fishery for "skrei" goes on from about the 1st of January to the end of April, from the neighbourhood of Bergen, increasing in importance as one goes north, and being chiefly concentrated at the Lofoten Isles; but there is an important "skrei" fishing on the Romsdal banks, which in recent years almost rivals the Lofoten fishery.

The latter is a very old fishing, mentioned in the Sagas and later exploited by the Hansards, who had a station at Bergen (still preserved). It is frequented by fishermen from almost all parts of Norway, accompanied by various vessels and steamers to minister to their needs and carry away the produce. The methods used are long-lines (chiefly) set-nets, and hand-lines; the lines are tending to displace the nets. The fishery for the smaller cod (torsk) is chiefly at Finmarken, the most northern province. It is a spring fishing, from about the end of April to the end of June, and is called the "lodde" fishery from the capelan bait ("rodde") used.

There is also a "skrei" fishery at Finmarken, from the New Year till the opening of the "lodde" fishing, and also one in summer and autumn for "torsk." The fish are almost all dried for export, either as stock fish ("torfisk") for which no salt is used—and they may be split but are generally round—and split-fish ("klipfisk"), which are split and salted. The heads and offal are utilised at the fish-meal and guano factories. Besides the fish, the livers and roes are important, the former for oil and the latter for bait in the French and Spanish sardine fishing. Here are the figures for all Norway of the "skrei" fishery:—

Year.	Tons.	No. of Fish (1,000's)	Livers.	Roe.	Total Value	Value per 100
			Hectolitres.		(1,000 kr.)	ungutted fish.
1906.....	126,500	46,848	107,013	46,580	16,426	35.06 Kr.
1910.....	149,200	55,336	120,911	46,900	19,203	34.70
1913.....	204,600	75,794	144,459	35,608	25,677	33.88
1914.....	218,227	79,844	144,527	65,481	31,775	39.80
1915.....	183,075	67,481	134,838	55,380	33,079	49.02

The influence of the war is seen in the diminished catch in 1915 and the higher values; since then the fishing has materially declined and it reached its lowest point in history this year (1918). Norwegian dried cod are, or were, sent all over the world, mainly to the Catholic Latin peoples—Spain, Portugal, Italy, South America, etc. In 1915 the export of klipfish was 43,552 tons and of stockfish 16,374 tons, the value being £2,900,000. The other fish of the codfish family are the following, showing quantities, in tons, for 1915: Coalfish, 24,304; haddock, 10,074; torsk (Brosme) 4,598; ling, 2,945; pollack, 100. These are also largely dried, but large quantities (as well as of cod) are ex-

ported in ice, or salted in barrels, or in bulk, much going to north Russia, and, in the early years of the war, to Germany.

The Herring Fisheries.

There are four chief herring fisheries (1) for fat herrings ("fetsild"), carried on in summer and autumn close inshore from the neighbourhood of Aalesund to Finmarken, drift-nets ("garn"), often fixed as set-nets, being used and also seines ("not") hauled ashore; (2), for spring herring ("vaarsild"), from January or February to March or April, between Lindesnaes and Stat, on the southwest coast; it is not so close inshore and drift-nets are mostly used; (3) for

the "great" herring ("storsild"), from November to February, from half-a-mile to five or even ten miles offshore, principally off the Romsdal district, (4) for small herrings ("smaasild") along the whole coast throughout the year, but most pronounced in autumn and on the northern stretch of the west coast. To these may be added the fishery for North Sea herring and for herring at Iceland. The following shows the total catch and value of the herrings: 1906, 1,504,000 hectolitres, valued at 10,124,000 kr.; 1910, 2,594,000 hl., valued at 11,678,000 kr.; 1913, 2,899,388 hl., valued at 13,377,000 kr.; 1915, 2,820,571 hl., valued at 31,118,000 kr. In 1915 the figures for the various classes were as follows:—Spring, 1,091,321 hl., and 6,915,000 kr.; "great," 742,070 hl., and 7,173,000 kr.; "fat," 418,211 hl. and 10,464,000 kr.; small, 447,554 hl. and 4,499,000 kr.; North Sea, 6,050 hl. and 151,750 kr.; Iceland, 115,365 hl. and 1,914,786 kr. The herrings are exported in ice, to Germany and Great Britain especially, also pickled, to Germany and Sweden, etc.; a large quantity, particularly of the small herrings are tinned, and often much of the "fat" herrings go to the herring-oil and guano factories. In 1915 the quantity of fresh herrings exported was 58,047 tons, valued at 9,288,000 kr., Germany getting 23,087 tons and Great Britain 28,760 tons; the quantity of salted was 165,450 tons, valued at 57,820,000 kr., Germany getting 79,895 tons.

The Tinning ("Hermetic") Industry.

This has grown to be one of the principal industries in Norway, and great credit is due to the Norwegians for their enterprise and skill in turning to such valuable account the smallest fish in their waters, the sprat or "brisling." There are now about 200 tinning factories in Norway, mostly at Stavanger, and so successful has the industry become that the supplies of sprats are no longer sufficient, and have to be supplemented by quantities of very small herrings, as in the New Brunswick and Maine industries. The fish lacks the particular flavour of the true sardine, which is absent from Norwegian waters, but it is usually smoked and has thus a flavour of its own; the "sardines" are packed in olive oil and cottonseed oil. The sprat is fished for in the fjords and coastal waters on the southwest coast, from about Aalesund south, with fine-meshed nets of many types (including purse-seines), from May to the following February. The quantity of "sardines" exported in 1915 was 17,659 tons, valued at 22,074,000 kroner; most go to the United States, Great Britain and British Overseas Possessions. Other fish are tinned, especially herrings, and notably kippers, of which 2,921 tons, valued at 2,629,000 kr. were exported in 1915.

Norway is a great fish-exporting country, the quantity, including oils, fish-meals and guano, etc., exported in 1915 being 465,708 tons, valued at no less than £16,317,000, a figure swollen through the German war demand; in 1913 the value was £7,860,000. A word must be said about the development of the export business in fresh (iced) fish, especially herrings to Germany and Great Britain. Great care and attention have been given to this, by subsidised refrigerator steamers and railway cars, and in other ways. The following figures are impressive, showing the exports to Germany and Great Britain:

	Fresh Herrings.		Fresh Fish.	
	Germany.	Great Britain.	Germany.	Great Britain.
	Tons.	Tons.	Tons.	Tons.
1890.....	107	5,674	137	397
1900.....	1,712	9,954	619	609
1910.....	39,346	42,922	2,008	38
1913.....	31,673	43,956	2,746	93
1915.....	23,087	28,760	10,112	621

Anyone wishful of studying up-to-date methods in fishery industries and organizations ought not to neglect Norway!

FISHERIES OF THE NORTH SEA.

There is a noticeable dearth of literature in book form on the commercial fisheries of the world. Writings on the subject are numerous, but mostly in government blue books, and small pamphlets are they found, and usually in technical language not understood by the layman. "The Fisheries of the North Sea," by Neal Green, is a welcome addition to piscatorial bibliography. The writer shows a distinct grasp of the subject and an unusual knowledge of the fisheries of Scandinavia, France, Germany, Russia, Canada and the United States. It is a little book, but its chapters are well balanced and show evidences of some clear thinking. Mr. Green gives a light and comprehensive sketch of the history and the natural advantages of the North Sea fisheries, and, while dealing particularly with that prolific fish-producing area, he introduces several interesting features on fish migrations, methods of fishing, value of catches in other waters.

The principle back of the book is the need for greater development of the North Sea fisheries after the war. He complains of the lack of interest in the fisheries on the part of the public and their apathy to the importance and economy of fish as a food. A note of warning is sounded as to continental competition in the exploitation of the North Sea fisheries after peace is declared, and he advises British fishermen to be prepared to maintain supremacy in an industry which means much to Britain in export trade and in the manning of naval and merchant ships.

All that Mr. Neal says can be applied to Canada in the development of our own fisheries, and we heartily recommend this book to Canadians—not only those directly interested in the fishing industry, but also those thoughtful citizens who are now studying ways and means for the economic development of our natural resources as a medium for paying our debts and adding to the wealth of the Dominion.

A number of copies of "The Fisheries of the North Sea" has been imported by the "Canadian Fisherman" and can be procured from this office for \$1.25 post free.

INSPECT HERRING PACK.

The department of the naval service has appointed William Wilson, of Prince Rupert, B.C., to advise and instruct western packers of herrings and inspect and brand their cured product during the ensuing herring season. The new inspector, who has had a thorough training in barrel-making and herring curing, will have his headquarters at Nanaimo. Mr. Wilson is a returned soldier.



Prince Edward Island Notes



During the past month fishing in Prince Edward Island has been confined mainly to smelts, the majority of these being caught through the ice in gill and bag nets. There are about 400 men engaged in handling the former and about 250 the bag nets.

The fishing has been carried on mainly in the Clyde, Vernon and East Rivers in Queens County, around Alberton, Richmond Bay and other waters of Prince and at Murray Harbor, Little Harbor and in various sections of Kings.

The catch so far has been an advance of that of last year and as the season does not close until February the 15th, it is expected that the total market value will be considerably in excess of \$54,000, which were the figures for 1917. Quite a number of the fishermen this season will net over \$1,000 each. In one night for instance, two men landed a ton and a half at Vernon River which selling at 9½ cents a pound realized \$285.00.

Another feature in the fishery situation last month was the organizing of a company to be known as the

Georgetown Fish Company. Its main object being to cure and market small herring commercially known as bloaters. The Company will also handle all kinds of fish. The smoked herring industry was carried on in Georgetown some years ago, but it was discontinued in 1912. The buildings are still standing and these have been put in shape in readiness for the spring fishing. An expert from Grand Manan, who has had a long experience in handling smoked herring in different parts of Maine, New Brunswick and the Magdalenes, will be placed in charge.

Georgetown Harbor has always been a favorite feeding ground for spring herring; and the smoker is located by a comparatively short distance from the grounds. The lack of facilities, however, has handicapped enterprise in the past. The new company is purchasing traps and expect to have no difficulty in filling the smoker twice each season. It has a capacity of 1,500 barrels. In the event of fish not striking in around Georgetown, the Magdalene Islands will be available as a source of supply.

Eaton Company's Model Fish Department

The Canadian Fisherman is indebted to the T. Eaton Company of Toronto, for the enclosed photograph of the fish display case used in that company's store in Winnipeg which has enabled the concern to conduct a fish department right in the midst of the meat and grocery section, without the undesirable odor often attendant to retail fish stores. The secret of the suc-

cess of this display and absence of odor lies, of course, in the display case.

The cases were designed according to plans laid down by the managers of their fish department at Winnipeg. The object they had in mind was to avoid the necessity of building a glass partition all around the fish department. It is possible that other counters



Fish Department of T. Eaton Company, Winnipeg.

of a similar type have already been constructed, but these counters built to order by the company are the first of the kind to come to our attention.

The tank is practically air-tight when the doors are closed. The only opportunity for odors to escape being through the outlet drain. The inside of the ice and fish tray is covered with galvanized iron, enamel- and white, and on this is placed an oiled tray raised above the bottom sufficiently to allow some six inches of air space. The ice and fish rest on the wooden slats of this tray, all liquid being drained below and strained through into the outlet. There is sufficient air space all around, between the inside linings of the tray to provide sufficient refrigeration, while the plate glass top and sides give a clearer view of the fish and, at the same time, keep it entirely covered. The doors with spring hinges are similar to ice box doors, being of double thickness and the springs guarantee their being closed at all times, except when fish are being put in or taken out.

It is interesting to note that thousands of pounds of Pacific flatfish and cod are retailed across these counters, every week. These fish arrive frozen and conditions within the cases are so perfect as regards refrigeration, that the fish can be kept two days, or longer, before thawing out. Of course the salesmen do not make a practice of placing on display more than enough fish to supply the day's demands, the reserve being kept in refrigerators near at hand.

CANADA—GET BUSY!

Since the war the exports from the United States to Australia have shown a considerable expansion, and the quantity of fish and fishery products has increased. An official American report states that while the value of the exports of preserved fish in tins in 1913 was \$951,232, the value in the fiscal year 1917-1918 amounted to \$1,204,744. The increase in other fish was from a value of \$29,658 in 1913 to \$79,736 in 1917-1918. Hitherto Australia has been a very good market for British-cured fish, especially perhaps tinned herrings and other tinned fish, and it is to be hoped that now the war is over we shall be able to send larger quantities than ever.—Fish Trades Gazette.

SAVED BY GASOLINE AUXILIARY ENGINE.

Fredericton, N. B., Dec. 11.

A letter, received to-day by a relative in this city, contained the distressing information that Captain Joseph A. Read, of Fredericton, understood to be the oldest active navigator of Canada, had the misfortune to lose his vessel, the tern schooner Silver Leaf which ran aground while en route to Barbadoes from equatorial waters for repairs. Her cargo of lumber, consigned to Cape Town (S. A.), was salvaged.

The Silver Leaf sailed from St. John, September 11. She was to have sailed a week previously, but the captain, while looking over the vessel preparatory to sailing, discovered that the gasoline engine, a very necessary adjunct to a sailing craft these days, was not in working order. An expert who was called in condemned the machine, and the "Silver Leaf" did not put to sea until a Fairbanks-Morse, 10 h.p. Type Z engine, operating a 6 inch F-M centrifugal pump was installed. It was the intention of her owners, New York parties, that the schooner after discharging at Cape Town should load hides at a West African port for New York. Before reaching Bridgetown bar,

she encountered heavy gales and made water rapidly, being kept afloat only by her gasoline pumps. Later she was becalmed and her bottom was fouled with barnacles. Unable to make headway, Captain Read decided to return to Bridgetown, but in the attempt the Silver Leaf went ashore.

Captain Read is an Albert county man. Prior to taking the Silver Leaf he had been ashore for two years. Early in the war he commanded a schooner which sailed through submarine zones without accident and on his last command took chances with Hun U-boats operating along the Atlantic coast.

LOBSTER CANNERS FORM RESEARCH GUILD.

The actual formation of the First Canadian trade guild for scientific and industrial research purposes is now in process. As a result of a conference at Amherst last week of the Maritime Province Cannery Association with Dr. A. B. Macallum, administrative chairman of the council of Scientific and Industrial research, the association decided to form a federally incorporated research guild. Some twenty-five canning firms were represented at the meeting which was held under the chairmanship of Hon. Senator John McLean of Souris. A committee headed by Mr. R. O'Leary, of Richibucto, was appointed to arrange for the organization of the guild and \$5,000 was voted towards research work in co-operation with the research council at Ottawa.

Immediate problems of research include investigations as to reasons for discoloration of products and cans in lobster and sardine canning, the bacteriology of spoiled products, etc. It is estimated that from five to ten per cent of the lobster and sardine output of the Maritime Provinces now goes to waste through spoiling, involving a loss of tens of thousands of dollars. It is believed that this waste can be prevented by the application of new scientific knowledge to canning processes. The combination of all the canners into one guild for research in solving their common problems of deterioration, production, etc., will, it is believed, have far-reaching result on the whole fishing industry of Canada.

The maritime canners have taken the lead in Canada in actually going ahead with the trade guilds for research scheme which is being urged by the research council. Other groups such as the textile industry, the rubber manufacturers, etc., are also preparing to adopt the research idea as now being rapidly developed in the United States and Great Britain. In Great Britain over thirty such guilds are in existence.

LAKE ERIE FISHERMEN WILL PLY TRADE THROUGH WINTER.

St. Thomas, Dec. 16.

Port Stanley fishermen have been advised by the Government that the closed fishing season, which means the expiration of the annual license on December 15, and forbids fishing from then until March 15, has been abolished. The reason for this change in the rules governing fishermen, it is said, is the effect which the recent epidemic of influenza had on the fishing industry. The Government having lifted all restrictions in this way, several tugs have started on further fishing expeditions. Port Maitland is said to be the best field at the present time, and those who recently lifted their nets will again begin work.



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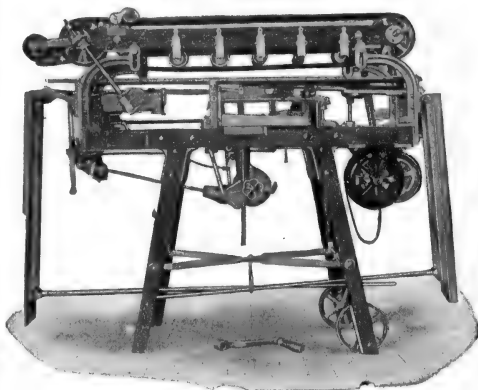
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The British Markets

Billingsgate, E.C.,
16th November, 1918.

There has been a welcome expansion in the quantity of fish available this week, but unfortunately this has been the outcome of a preponderance of one or two kinds, rather than a general all-round increase in the catches. The fish most prominent has been those kinds landed by drifters—herrings, sprats and mackerel. Inquiry for all kinds has continued keen, and apart from the three varieties mentioned above, rates have been easily maintained at the maximum. Herrings, sprats and mackerel, however, have changed hands at all manner of figures, values varying according to the quantity available, and the condition of the fish. Rather curiously, while herrings, both fresh and sprinkled, have hung fire, demand has been insistent for kippers, and despite the substantial consignments received — Billingsgate alone has had round about 14,000 boxes daily—prices have stood firm at the maximum level of 10s 9d per stone (14 lbs.), and what is more, the fish has gone into consumption freely.

Best qualities of the Ministry of Food Canadian frozen fish have again proved welcome, but the general consensus of opinion in this country is that with the rapid increase of landings of fresh fish, which may be expected from the release of fishing boats by the Admiralty, combined with the opening of certain areas which have been closed to fishing purposes during the past four and a half years, there will be little call for frozen fish, except when fish from home waters is exceptionally scarce, and even then prices must be much lower than those recently current for frozen fish. No doubt these rates have been justified in the abnormal times through which we have passed, but the question for Canada now to consider is whether frozen fish at, say, 50 to 60 per cent reduction on those prices will bare the expense of freezing, packing, freight, in addition to storage in the United Kingdom for longer or shorter periods to await an occasional favourable market.

There is still a big call for frozen salmon, and immediately the shipping outlook eases exporters will be well advised to dispatch supplies to Billingsgate.

Billingsgate, London, E.C.
23rd November, 1918.

This week's markets have not presented any particular feature of interest. Apart from one or two kinds, such as herrings and kippers, and to a lesser extent, mackerel, supplies generally have remained short of requirements. Long fish, i.e., cod, ling and similar varieties, continue unusually scarce, and several varieties of flatfish are difficult to obtain. Haddocks remain fairly abundant, comparatively speaking, but the demand from curers is so insistent that prices invariably rule firm at the maximum level.

Canadian frozen fish is still being offered, but apart from a case of pan-frozen fish here and there, the fish now available shows signs of the long storage to which it has been subjected.

All sections of the trade in this country are now eagerly awaiting an easing of the abnormal conditions which have prevailed during the war period. Although no definite information is available it is expected that numbers of steam trawlers and steam drifters will be

speedily released by the Admiralty, while an immediate removal of some of the restrictions regarding the prosecution of fishing operations on several of the areas which have been closed is anticipated. Of course, this would have the effect of at once increasing the catches, to the benefit of all concerned.

Billingsgate, E.C.,
30th November, 1918.

Speaking generally, supplies this week have shown a falling off. Neither Grimsby nor Hull has received any convoys from the deep sea grounds, the only Iceland fish available this week being landed at Fleetwood. In the catches of trawled fish from home waters, plaice and haddocks have predominated, while cod and haddocks were most noticeable in the deliveries from the deep water areas, plaice also showing up well in the latter catches.

The autumn herring season at Gt. Yarmouth and Lowestoft is now rapidly drawing to a close, the bulk of the Scotch boats having already left for their home ports. Taken on the whole the vessels have had a successful season.

So far as the markets in the distributing centres are concerned the arrivals of most kinds of trawled fish have been totally inadequate to requirements, and all the fish has been easily placed at the maximum prices. The herrings too, have commanded full values; and mackerel—chiefly from Ireland—when in good condition has found a ready market at the maximum level of 7s 6d a stone. There has been more or less an abundance of sprats, but these fish have rather hung fire, and except for really bright, large fish inquiry has been very slack at low figures.

The first intimation of a relaxation of Admiralty restrictions is to be found in the announcement that the Port of Scarborough, which has been closed to steam trawlers since September, 1916, is now open once more as a fishing port.

Billingsgate, E.C.,
7th December, 1918.

The week opened with fairly generous landings at several of the principal fishing ports, but a fierce gale over the week-end presaged a further shortage, so that the meagre supplies on subsequent days did not come as any great surprise. In fact, with the exception of Fleetwood, where landings from the home grounds have been augmented by catches from Icelandic waters, scarcity has reigned supreme. This has been reflected in the conditions prevailing at the markets in the consuming centres, all kinds of trawled needing to be rationed out to buyers, and needless to state, there has been little business transacted below maximum rates.

The herring fishing is still being prosecuted in East Anglian waters by a few vessels, but the bulk of the boats have now left for home, so that the general shortage has been accentuated by the falling off in the quantity of herrings available. Mackerel, too, has been far from plentiful. In fact, the only variety at all prominent has been sprats, and these fish have sold well if large and bright, but small rubbishy fish have been neglected.

Yesterday a large shipment of frozen fish from New-

foundland reached this country by the arrival in the Thames of the Bayano with a consignment of frozen cod, fresh haddocks and salmon. None of the fish has been landed up to the time of posting this report, so that it is not possible to state whether the exporters have heeded the remarks made in this column more or less continuously for the past twelve months. Next week it should be possible to report on the condition and packing of this fish, and it is sincerely to be hoped in the interests of all concerned that there will not be the same cause of complaint as there has been with the previous arrivals. It is stated that some of the fish has been packed in lesser quantities than cases of 200 lbs., and if this should be so it could certainly prove advantageous.

14th December, 1918.

Scarcity has reigned supreme at all fishing centres in the United Kingdom this week. Of course, this is not an unusual experience for the time of year, but owing to the Government control of prices, practically all sections of the trade are in a position to buy, and there is thus insufficient fish to satisfy all requirements; under ordinary circumstances, with a free market, prices in times of shortage go beyond the reach of many buyers, and at the level reached in times of light landings the quantity available is usually sufficient for those who are prepared to pay the figures asked. However, in view of the abnormal food situation confronting this country a few months ago, no one can cavil at the action taken by the authorities, and it certainly redounds to the credit of all sections of the fishing industry that business has been carried on during the past few months with the minimum of friction. Now that hostilities have ceased the industry looks for a speedy release of the large number of steam trawlers and steam drifters which have been employed by the Admiralty on National Service, and also, as soon as circumstances permit, of the removal of the restrictions on certain of the best fishing ground adjacent to the British Isles.

The new arrival of frozen fish from Newfoundland mentioned in the last report is now on offer. Apparently those responsible for this shipment have given heed to the comments passed on previous consignments and published in earlier issues of the Canadian Fisherman; the fish appears to have been frozen when perfectly fresh, and great attention has been paid to the grading. Then again, part of the cargo consists of packages containing 80 lb. and 60 lb. respectively, which is a far more convenient package to handle than the unwieldy 200 lb. packages. This fish has been marketed at a most opportune time, and has met a ready sale, being scheduled by the Ministry of Food at 9s 6d a stone wholesale. The shipment consists principally of cod, but also contains a fair quantity of fresh haddocks, together with a few cases of salmon. The reliable quality of this shipment, provided it is maintained all through, should do much to re-establish the confidence of the trade in frozen fish from Canada after the unsatisfactory experience with earlier arrivals, particularly the so-called "hake."

The firm of Peter Forge is again acting as Distributing Agent to the Ministry of Food at Billingsgate, and no doubt that firm will be pleased to answer any inquiries which prospective exporters may address to them regarding prospects for Newfoundland fish on the British markets. One thing is certain, and that is that the present prices for frozen fish must not be expected to continue when supplies of fish from home waters increase, as they are essentially war prices.

KLIM

IN POWDER FORM

It has the "real milk" flavor.

The popularity of KLIM aboard ship is being built up on its natural, unchanged flavor. That flavor not only pleases the palate, but it proves the fact that Klim is genuine pasteurized separated milk with nothing added and nothing removed but the water.

Klim is delicious to drink, is great in tea, coffee or cocoa, and improves any baked or cooked food to which it may be added.

Buy it in 10 lb. tins — 6 tins to a case.
Buy as much as you have room for. It will not freeze or spoil.

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**Canadian Milk Products,
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SHIPMATE HEATING STOVES

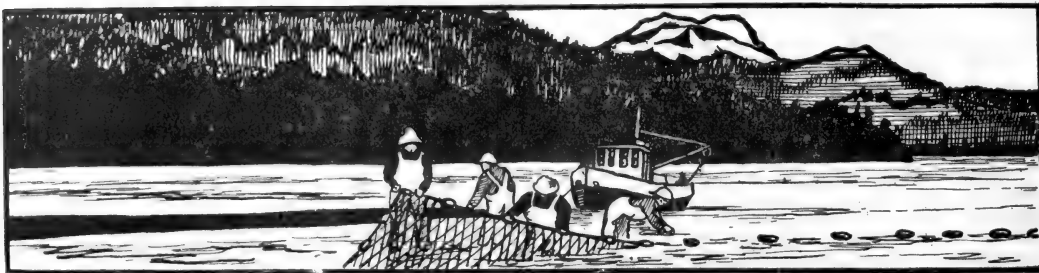
As good as Shipmate Ranges, and that is all that need to be said.

Send for descriptive folder.

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Established 1830 Stamford, Conn.



Newfoundland Fishery Development

By JOHN S. SCOTT.

St. John's, Nfld.

In considering the development of Newfoundland's resources it is necessary to deal with a factor which inaugurates a new era in the country's immense fish business, and which promises to add appreciably to the wealth of the colony.

Practically, heretofore, "fish" in Newfoundland has meant salt cod. Other kinds of marine food products have been traded in to some extent, it is true, and in small quantities have found their way into world markets, but the great bulk of the country's exports of fish have consisted of salt cured dried cod fish. This has been the staple product upon which the trade and prosperity of the country has been chiefly based notwithstanding the fact that the coastal waters abound in a great variety of fish, some of which held out commercial possibilities.

Newfoundland salmon, for instance, possesses a peculiarly delicious flavor, which according to a well-known Scotch fish expert is the equal of the famed Scotch salmon; and haddock, halibut, herring and flounders are easily saleable in foreign markets. Then there is the smelt-like caplin; the turbot, resembling in flavor and appearance, the small halibut; the codfish, wolffish, skate, pollock; and the cod's particular tit-bit, the ink-squirting squid; which is in great demand for bait, and which in Broadway restaurants has been eaten with relish, albeit unconsciously perhaps, as a constituent part of lobster salad. Yet none of these fish have cut any considerable figure in the colony's fish trade, and as articles of food some have been entirely ignored. Caplin, for example, a most tasty little fish, has been considered useful only as a land fertilizer, and other varieties of proven food value have been looked upon by the Newfoundlander as worthless.

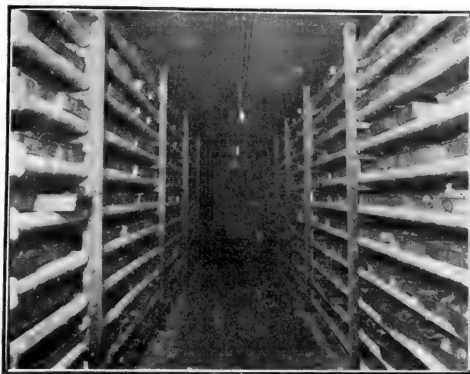
All of this seems likely to be greatly changed by the use of refrigeration for preserving fish of all kinds in its fresh state. Already what appears to be a successful experiment in refrigeration has been made with a plant that is said to be one of the most modern and efficient on the North American continent. This plant has been built in St. John's by the Newfoundland Atlantic Fisheries, Limited, a subsidiary to the Reid Newfoundland Company, in which the two sons of the late Sir Robert Reid, who are now in control of that concern's country-wide enterprise, H. D. Reid, and R. G. Reid, have been the moving spirits.

The refrigerating plant of the Newfoundland Atlan-

tic Fisheries has a storage capacity of 6,000,000 pounds, a cargo for a 12,000 ton vessel, and enough to fill 120 average refrigerator railroad cars. The building which is 90 x 300 ft. is three storeys in height, of brick shell construction, with walls and floods two feet in thickness embodying the latest ideas of insulation. The structure contains eight cold storage rooms in which the fish is held, after freezing. The freezing equipment consists of five sharp-freezers having a total holding capacity of 350,000 pounds. Through these rooms thirty-five miles of 2½ inch pipe is distributed, carrying the circulating ammonia which extracts the heat from the "warm" fish, and within a few hours converts it into an object as hard, and apparently as dry as a stick of wood.

The refrigerating machinery consists of two duplicate machines of 200 ton ice-making capacity, driven by electric motors, the current for which comes from the Reids' hydro-electric plant a short distance from the city. Only one machine is used at a time, the duplicate having been installed for safety in case of trouble. In addition to this precaution, an emergency steam-driven machine of 75 ton ice-making capacity has also been installed, to "hold" the refrigeration in case both big machines are put out of commission. The refrigerating machinery also serves an ice-making plant with a daily capacity of fifty tons, the product of which is utilized in packing the cars and vessels in which the fish is transported to and from the plant.

Much of the fish handled by the Newfoundland Atlantic Fisheries is caught within a short distance of St. John's, and comes to the plant by water in small fishing vessels. Some are taken from the outport waters and sent in by rail. In every case the fish reaches the refrigerating plant within less than twenty-four hours after having been taken from the water, and immediately upon its arrival is thoroughly cleaned and rushed into the cooling room, or a sharp-freezer, in metal pans each holding forty or eighty pounds. After being solidly frozen into a mass at a temperature of from 15 to 30 degrees below zero, the fish is hoisted by elevators to the storage rooms, where a dipping in clean fresh water releases the frozen mass from its container and at the same time gives it a fresh ice coating, or glaze, which has the effect of hermetically sealing up the whole block. In due course the fish is packed in wooden cases in forty, eighty and two hundred pound quantities, and is then ready for shipment.



SHARP FISH FREEZER & STORAGE ROOM NFD. ATLANTIC FISHERIES LTD.

WE REFER YOU TO ALL OUR CUSTOMERS
THEY ARE OUR GREATEST ASSET.

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MACHINES

AT YOUR DISPOSAL
CIMCO SERVICE

CANADIAN ICE MACHINE CO., LTD.
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FRESH AND FROZEN FISH
Correspondence solicited
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Readers of the "Canadian Fisherman"
desiring to know more about the
"Henderson Fish Preserving Process,"
which is patented in Canada and other
countries, should communicate with
GEORGE HENDERSON
Box 2449, G. P. O.
SYDNEY, AUSTRALIA

The influenza stopped the salmon fishing about ten days earlier than would otherwise have been the case, as a great many of the fishermen were laid up. Wallace Fisheries plant at Uchucklesit was closed for a considerable length of time. The steamer "Imbricaria" has been tied up at Rupert for several weeks on account of the malady, and the steamer "New England" has been tied up at Ketchikan as nearly every man has been ill.

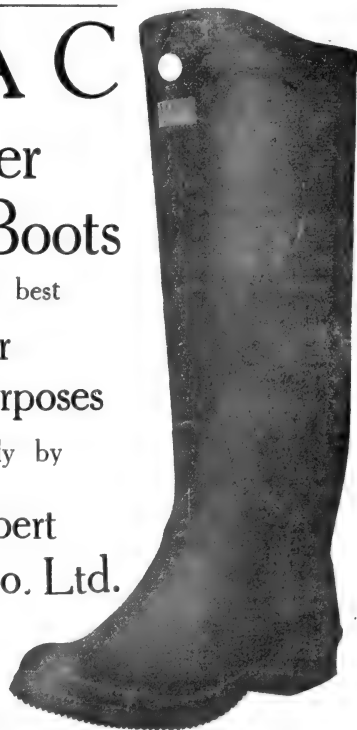
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Rubber
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are the best

For
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Sold only by

The Robert
Taylor Co. Ltd.
Halifax,
N.S.



Good judges of fish assert that the Newfoundland cold storage product which is now beginning to find its way onto the market, is as good in every respect as fresh fish. It is said that after being properly prepared for the table, it cannot, in fact, be told from the strictly fresh article. Refrigerated fish, of various kinds, which have been treated by the St. John's concern have been eaten by epicures in the belief that they were fresh-caught, and no one, it is claimed, has yet found any fault with the flavor and quality of the frozen product.

In its probable effects upon the country, the enterprise of the Newfoundland Atlantic Fisheries is unquestionably a highly important matter. While the past season's operation of the St. John's plant has had no appreciable effect upon the fish trade of the colony as a whole, it has nevertheless introduced new methods in handling the fish catch, and has created new conditions and opened up new opportunities for Newfoundland fishermen. The time honored system of salting and drying fish, which placed a period of several months between the catching of the fish and the monetary reward for his efforts, remains no longer as a necessary evil with every fisherman. Already many local fishermen have experienced the satisfaction of making their day's haul and disposing of it before bedtime at a good price for cash. One perhaps unexpected result the new system has had, has been to encourage fishing, and to actually create new fishermen. Clerks in stores, and others who had found nothing to attract them in the old slow process of realizing money from the products of the salty deep, have during the past season spent a good deal of their spare time in fishing, and have been able to make more in fishing a few hours a day than they could earn at their regular occupations. Some of these men, it is expected, will give more attention to fishing next year and in the future, if the good prospects promised by this year's operation of the cold storage plant are realized.

Another effect, gratifying alike to the fishermen and to the food conservator or economist is the elimination from the fishing industry of the deplorable waste that has existed in the long established system in which the cod has attained a degree of importance which amounts almost to glorification. "The glorified cod," in fact, is not a great exaggeration. Heretofore, the cod has been fished in Newfoundland, and other varieties which obtruded themselves onto fishermen's hooks, or into fishermen's nets or traps, have as a rule, when discovered, been promptly and contemptuously returned to their briny homes—often in lots of hundreds of pounds at a time.

The Newfoundland Atlantic Fisheries have been glad to receive practically every kind of fish which could be caught during the past season, and thousands of pounds of salmon, halibut and haddock which previous to this year represented waste effort, are now stored in the company's refrigerating plant. This means extra money to the fishermen and extra food to a hungry world.

From this new development it is predicted the total output of fish from the island will be greatly increased year by year, and that as a matter of necessity the form in which the country's products will reach the markets, will be materially changed. This will mean, inevitably, a general readjustment of business methods and a change in plans by some, at least, of the concerns in the fish business.

To what extent the salt fish industry will be affected

by the refrigerating business no one can say. There seems to be no good reason to anticipate any marked decline in salt fish trading, within the near future, at least; and that eventually there will be any considerable lessening of business in that line does not appear as a necessary consequence. For salt fish, it may safely be assumed, there will always be a strong demand, and Newfoundland is favorably situated to cater to that demand. In South American and European countries the Newfoundland article is highly favored because of its quality, and will undoubtedly continue to be asked for indefinitely. There is, therefore, no reason to fear that the Newfoundland refrigerated fish will displace the salt dried article in foreign markets to any great extent, if at all. The only contingency that might adversely affect the salt fish trading is the possibility that the requirements the refrigerating industry might divert a portion of the country's catch from its customary channel, but this is a condition to be feared only on the assumption that there is only a certain quantity of fish obtainable from Newfoundland waters, or that there are, and will be, only a limited number of men to engage in the fishing industry. Neither assumption can be soundly based. Fish in practically unlimited quantities is, and, presumably will always be procurable in the waters that have unfailingly supplied the colony for four hundred years, and getting men to catch them is obviously only a question of offering sufficient inducements.

The net results in prospect for the colony, therefore, seem to be that the refrigerating industry will, if as successful as it promises to be, stimulate fishing as an industry, and ultimately add much to the wealth of Britain's oldest colonial possession.

The first big shipment from the Newfoundland Atlantic Fisheries went out from St. John's last week to England in the "Bayano" which carried some 3,250,000 pounds. Other shipments will follow, and smaller consignments are now being sent to the American markets.

WHALE MEAT.

Welcome, O whale from frigid zones!

This season's greeting I am giving
Because your girth and meaty bones
Will greatly ease the cost of living!

When turkeys fetch six dimes a pound,

And porterhouse is out of sight,
I'll stake my all upon a round

Of whale meat, wholesome, cheap and light!

They tell me that your breast and tail—

To say naught of your fins and blubber—
Are sweet and tender, gentle whale,
To suit the most fastidious grubber!

My New Year's turkey I will can

And try a plate of whale and chips;
The papers say that any man

Who does the same will smack his lips!

There's just one danger I can see

As o'er my tempting meal I gloat;
'T would be a trifle awkward, Gee!

To get a whale rib in my throat!

J. L. Love.

W. R. SPOONER

Wholesale and Commission Dealer

Fish of all Kinds

119 Youville Square,

MONTREAL

I am in the market at all times to Buy or Sell on Commission,
Fresh, Frozen, Smoked and Salt Sea and Lake Fish, in Carload
Lots or Less.

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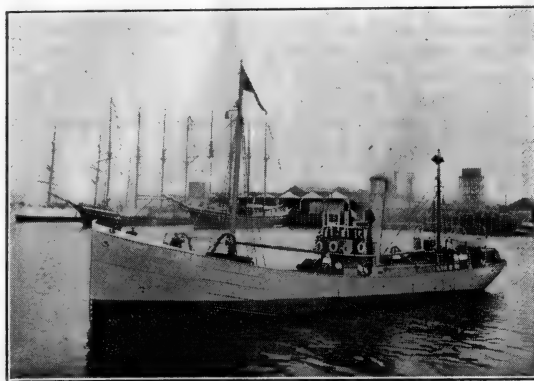
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*Hadaies,
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*Fresh,
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STEAM TRAWLER TRIUMPH.

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National Fish Co., Ltd., Halifax and Port
Hawkesbury, N.S.

Prince Rupert Fishermen had a Good Season

**Publicity Campaign of Canadian Food Control Board
Very Largely Increased the Consumption of Fish all
Over the Dominion.**

How pleasant and satisfactory it is, at this festal season, to reflect upon the immense growth of Prince Rupert's chief industry, fishing, during the past year, says an article in 'Resources.' It has done more than any one thing to place Prince Rupert on the map to stay. Prince Rupert is now well-known as a fishing port, and it will take but a few years at the present rate to make it rank among the world's greatest fishing ports.

Now much of this prosperity in the industry is due to one thing, the advertising on a large scale of fish as nutritious and economical food by the Canadian Food Board. Before it began its propaganda advertising fish, very little fish was consumed by Canadians, except in coast towns. It is only in recent years, since the perfection of cold storage, that fish was to be obtained in a fresh state at interior points, and therefore eating fish was not a habit. By constant advertising, by pointing out the nutritive qualities of fish and the many, many dainty ways in which it could be prepared for the table, and by harping on the subject all the time, the Food Board succeeded in converting Canadians into fish-eaters to such an extent that the Board had next to take steps to obtain a sufficient supply of fish for the consumers it had created by its fish campaign.

The Pacific Coast has long been famous for its salmon and halibut and the ready market for these fish resulted in depletion and the climbing of both into the luxury class. Yet there was plenty of other fish, if people were educated up to them and their uses. This the board did. Then started a hunt for cheap sea fish for the citizens of the inland provinces, and found here unutilized brills, soles, red, grey and ling cod and other varieties in enormous quantities.

The Board, by its extensive and attractive advertising made the people's mouth water for halibut and salmon in the hope of decreasing the consumption of beef, which was needed for the army. When salmon and halibut got too high in price for the working man's family,

they sought and produced fish of a cheaper class to appease the appetite created.

Before this campaign of advertising fish begun last year our fishermen used to toss back into the ocean all fish taken except salmon and halibut. Now there is a market for every kind of fish they can bring into port.

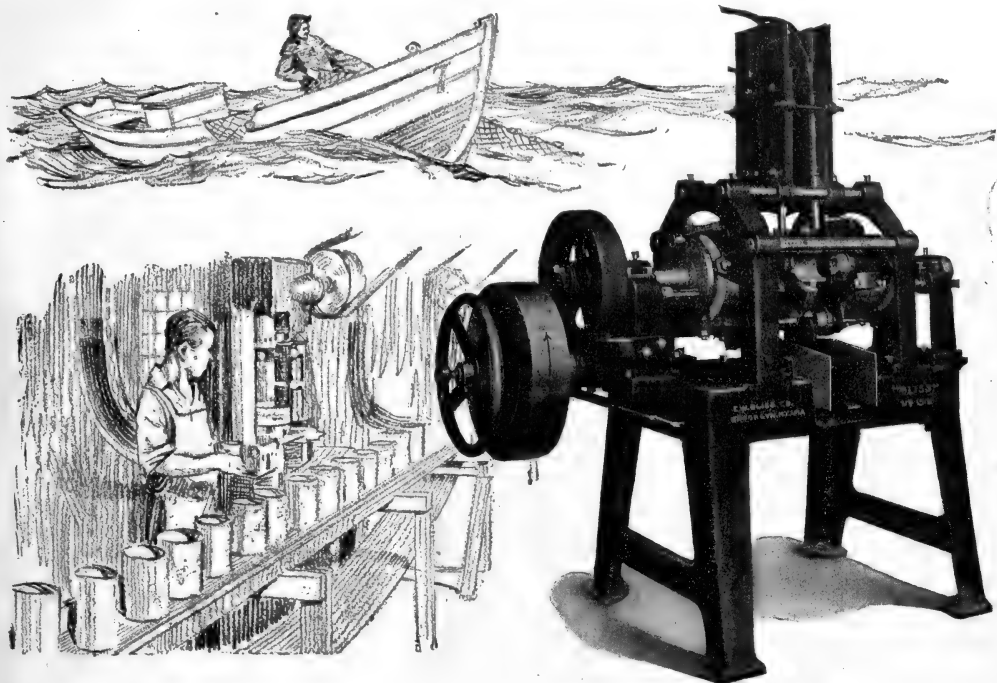
It can be safely said, therefore, that the consumption of fish in Canada has increased one hundred per cent since the start of the Board's operations in this direction. This has been accomplished by its own advertising, and by the advertising of those in the fish business following their lead, and by the sympathetic co-operation of the public generally.

To accomplish this the publicity activities of the Board have been of the most varied and attractive character. Illustrations galore, printed circulars and huge posters everywhere. An accomplished writer who knows all about fish—a combination rarely met with and hard to beat—went out from Prince Rupert accompanied by a motion picture camera man in the trawler Carruthers, and described orally and pictorially how the fish were caught, how they were treated in the boat, landed, dressed, packed in ice and started on their way east. All this has been seen by the people far away from the ocean who were just beginning to find out that fish is good eating, in the movies, and seeing is believing to minds just bursting the bonds of slothful ignorance. And to cap all this diverse advertising the Board proclaimed a national fish day, October 31st, and for that day there went from this new fishing port no less than twenty car-loads of frozen flat fish, so that the fish-hungry folk of Calgary, Edmonton, Saskatoon, Regina, Moosejaw, Winnipeg, Toronto and Montreal might properly celebrate the day.

The outstanding feature of the fish industry during 1918, therefore, has been the tremendously increased production and consumption, both on the Pacific and Atlantic, of those varieties of fish which up to recently



Spring Salmon Caught in Skeena River, B.C.,
district.



Modern Cannery Practice

Allows little time to elapse between the catch and the final operations on the pack. Prompt and continuous streams of all the elements necessary to make cans are depended upon to avert loss.

Clean cut, high quality output required of all "Bliss" Automatic Can Making Machinery, but steadily continued production at high speed is likewise a feature of importance. These things have been developed in The "Bliss" lines through nearly sixty years of experience and co-operation with canners and can makers in all parts of the world.

"BLISS" AUTOMATIC ROUND-CAN DOUBLE-END FLANGER, NO. 15-K. This machine flanges both ends of can bodies simultaneously and is entirely automatic and continuous in operation. It produces flanges on 100 to 150 cans per minute and can be readily adjusted from one size to another.

Write for Catalogue Section No. 18-A



1857

E. W. BLISS COMPANY

Main Office and Works; BROOKLYN, N.Y., U.S.A.

CHICAGO OFFICE

People's Gas Bldg.

DETROIT OFFICE

Dime Bank Bldg.

CLEVELAND OFFICE

Union Bank Bldg.



1917

LONDON, S.E., ENGLAND, Pockock Street, Blackfriars Road

PARIS, FRANCE, 100 Boulevard Victor-Hugo St. Quen

had not been popular. They were always eatable but this was not generally known. More particularly was this the case in regard to those varieties of fish produced on the Pacific coast almost exclusively. The different kinds of cod are produced on the Atlantic as well as the Pacific, and haddock and pollock only on the former.

The increased consumption has produced another feature of the year in the largely increased number of steam trawlers in operation. There are now three here and five on the Atlantic. This is a remarkable development because it brings the fish industry up to date with that of the old country. And next year will see a still further increase of the trawlers, as there are quite a number under construction.

The future success of the fish industry, in this or any other part of the world, depends on the facilities provided to produce and take care of the commodity in the quickest possible way, so that it gets into the hands of the consumer in the best possible condition. In the old country millions of dollars have been spent in providing facilities to this end, and now that the Dominion government has done so much to create a national appetite for fish food, it may go one step further and aid in providing quick transportation facilities. It has been doing something already in the way of a subsidy by paying a goodly part of the freight rate from this port to eastern cities. But this was no doubt a war measure to increase the rations of the trenchermen in the trenches.

In this connection there is another feature in the growth of the industry for which credit must be given to the Food Control Board. This lies in the fact that there was a much greater percentage of frozen fish consumed during the year than ever before. Well known scientists and physicians have recommended the public to eat frozen fish in preference to the unfrozen article, particularly in those cities that are a number of miles from the source of production.

The industry has also gone "over the top" in another direction which is worth calling attention to. Which is in the number of new canneries established on this coast during the year, particularly on the Queen Charlotte Islands and the west coast of Vancouver Island. Several new canneries have been built and operated there since the year opened.

In one feature of the industry there has been a falling-off in the production, to be made up in another. There has been less halibut produced than for several previous years. The first reason for this lies in the depletion of the species, and the second reason in the cost of production. This has grown to be so high that in many cities dealers have refused to buy the product at the high price asked, and have been giving their attention to the cheaper varieties of fish, such as flat fish and cod. The expenses of operating vessels owned by large companies has been so high in halibut production, that many of the vessels have been diverted to other branches of the industry.

During the year the Americans tried to fix the market price of fish, but the Canadian government declined to do this and the American government then withdrew its proposition, and at the present there is no control of fresh or frozen halibut, salmon and black cod on either side of the line.

There is one other feature of the year particularly gratifying to the small fishermen, and that is to be found in the large quantity of pilchard and herring that have been canned this year for the first time. These canneries

are for the most part on the west coast of Vancouver Island, and report is that they have been most successful in marketing the new product.

Altogether it has been a great and glorious year for the fishing industry, thousands of people on the prairies, hundreds of thousands in the trenches, having been brought to a knowledge of how good a food fish is perhaps for the first time in their lives. The wholesale use of fish food in Europe during the war cannot fail to have made Prince Rupert fish famous, and have created a huge new market for it in these piping times of peace.

INSPECTION OF CURED HERRING IN BRITISH COLUMBIA.

The Fish Inspection Act of 1914 does not compel packers to submit their product for inspection, consequently, inspectors are appointed in parts of the country only, where their services are likely to be called for.

Up to the present time, it was not considered necessary to maintain an Inspecting Officer on the Pacific coast, because herring curing has been carried on in a small way by people having a sufficient knowledge of the business to enable them to sell their output readily on the strength of their own trade mark.

Conditions arising from the war have since greatly stimulated this branch of the fishing industry in British Columbia, and a number of packers who lack the necessary knowledge and experience are being drawn into it.

In order, therefore, to prevent, as far as possible, the reputation of all British Columbia cured herring from being injured by the packing and marketing of badly cured fish, the Department of the Naval Service has appointed William Wilson of Prince Rupert to advise and instruct packers, and inspect and brand their cured product during the ensuing herring season, in accordance with the provisions of the Fish Inspection Act.

The inspector has had a thorough training in barrel making and herring curing in Scotland, and those concerned may rest assured as to his practical fitness for the work he is called upon to do.

His headquarters will be at Nanaimo, and packers and buyers who may desire to make use of his services should address communications to him in care of the Inspector of Fisheries there.

HUGE OVERSEAS SHIPMENT OF FROZEN FISH.

The steamer Bayano, taking 3,250,000 pounds of fresh frozen fish from the Newfoundland Atlantic Fisheries, Ltd., arrived recently in England. Sir Edgar R. Bowring took passage by her en route to London, where he takes up the duties of High Commissioner for Newfoundland.

The whaling steamer, Halcyon went adrift at Akutan, Aleutian Islands in a big storm, November 11th, while her captain and crew were ashore. This is the vessel which furnished the inspiration for Jack London's story of the "Sea Wolf." The Halcyon was built in San Francisco in 1887 and purchased about two years ago by the North Pacific Sea Products Co. of Seattle, one of the companies forming part of the Consolidated Whaling Corporation.

When the Catch comes in!

FROM purse-seiner to labeler, there is one *best* footwear—"Hi-Press". Its superiority over other footwear is so marked—so evident—that you cannot possibly go wrong with it. "Hi-Press" comfort means much when you are on your feet for long stretches and its remarkable wearing quality counts heavily in these war-days of tight purse-strings. Protect your health, ease the strain on your feet and economize—with "Hi-Press." It is the modern improved Boot; *welded* together under high pressure; it *can't leak*. 40,000 dealers recommend it.

The B. F. Goodrich Rubber Co.

AKRON, OHIO — The City of Goodrich

HI-PRESS

With the RED LINE
'round the top

The GOODRICH BOOT for Fishermen



ALBERTA AND SASKATCHEWAN FISHERIES.

The northern fishing industry has been pushed out into new fields, or rather lakes, this winter owing to the closing of Lesser Slave lake and Lac la Biche to winter fishing.

Buffalo lake, in Saskatchewan, about 75 miles east of the Waterways railway, is being fished commercially for the first time by the Alberta Fish Company and the McInnis Fish Company. It is a large lake, and is on the old Long Portage canal route between Cumberland and McMurray. Fish will be shipped from a point on the Waterways railway, about 100 miles north of Lac la Biche.

Trout lake, about 110 miles northeast of Grouard, is also being fished commercially for the first time this season. The Western Canada Fish and Produce Company are operating there on a large scale. The fish are hauled to Enilda siding on the Dunvegan railway, a distance of about 110 miles. The route is by way of Whitefish lake and Grouard.

Whitefish lake, about fifty miles northeast of Grouard, is being fished this season by the Arctic Fish Co. The fish are teamed through Grouard to Enilda siding.

At Little Whitefish lake, lying southeast of Whitefish lake, Mr. Feset is fishing for shipment at Enilda.

At Christina lake, on the Waterways railway, about

75 miles north of Lac la Biche, the Athabasca Fish Company is operating.

Lake Mistahae, south of the Wabiskaw lakes, is being fished commercially this winter. Fish are teamed about 50 miles to the railway at Sawridge.

Calling lake, north of Athabasca, is also being fished. The fish are teamed to the railway at Athabasca.

The fish industry of North Alberta has developed to be of great importance. Several hundred men are employed in actual fishing. There are possibly 100 teams or more employed in hauling fish to the railway, and there is besides a large staff employed in the work of shipping, accounting, etc. The fish are shipped chiefly to the large cities of the United States. They are of especially fine quality, and are almost solely whitefish.

SOME TRIP!

What is claimed to be the largest stock ever realized by a sailing vessel on a 10-days' fresh haddocking trip was made by sch. Ruth and Margaret, Capt. Val. O'Neill, at Boston recently, when the vessel took down a check of \$8,715 as the result of a 10 days' trip on Western Banks.

Each of the crew shared the fine sum of \$234 clear. The vessel weighed off 80,000 pounds of fish and struck a lucky market, when fish were scarce and prices were high.

STATEMENT SHOWING THE QUANTITY AND VALUE OF FISH EXPORTED THROUGH THE PORTS IN THE PROVINCE OF BRITISH COLUMBIA, DURING THE FISCAL YEARS ENDED MARCH 31st, 1916, 1917, and 1918, RESPECTIVELY.

	1916.		1917.		1918.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Fresh codfish including:						
Haddock, Ling and Pollock, Cwt.	836	\$2,903	1,184	\$4,957	1,382	\$6,636
Dry salted codfish.....Cwt.	547	3,582	17	206	50	750
Wet salted codfish.....Cwt.	41	184	..	..	8	52
Pickled codfish.....Cwt.	..	..	200	1,000	245	1,440
Smoked codfish.....Cwt.	519	3,830	728	6,448	602	7,726
Pickled Mackerel.....Brls.	..	..	49	922	225	5,025
Fresh Halibut.....Cwt.	7,250	46,007	2,039	16,726	791	7,689
Pickled Halibut.....Brls.	..	..	45	725	..	..
Fresh Herring.....Cwt.	2,700	2,387	5,079	7,289	96,639	109,415
Pickled Herring.....Brls.	100,889	299,147	133,560	312,015	18,003	227,843
Canned Herring.....Lbs.	289,314	22,341	1,829,382	163,774	2,255,880	268,716
Smoked Herring.....Cwt.	829	4,693	993	6,128	1,306	12,884
Eels.....\$	..	..	..	68	..	..
Smelts.....Cwt.	1,150	4,269	672	3,978	129	1,076
Other fresh fish (sea).....Cwt.	73	853	368	4,494	8,970	15,999
Pickled sea fish.....Brls.	..	..	..	..	132	1,551
Preserved sea fish.....Lbs.	82,520	5,188	40,664	2,804	4,386,398	42,697
Fresh Oysters.....Brls.	218	2,274	170	2,325	878	9,714
Canned Lobster.....Lbs.	357	115	96	32	2,400	1,120
Fish for Bait.....Brls.	..	..	414	898	2,551	6,058
Clams.....Brls.	..	..	23	76	30	93
Fresh Salmon.....Cwt.	12,519	45,682	19,884	84,534	39,779	208,662
Smoked Salmon.....Lbs.	283	30	829	106	3,858	708
Canned Salmon.....Lbs.	31,598,976	4,044,660	17,982,223	2,057,277	22,194,449	4,045,961
Pickled Salmon.....Brls.	7,605	47,148	4,549	74,628	1,123	28,772
Dog Salmon.....Cwt.	205,956	224,893	187,213	263,758	100,544	349,221
Salmon or Lake Trout.....Cwt.	5	25
All other Fresh Fish.....\$..	1,490	..	2,774	..	6,691
		4,761,676		3,017,967		5,366,499

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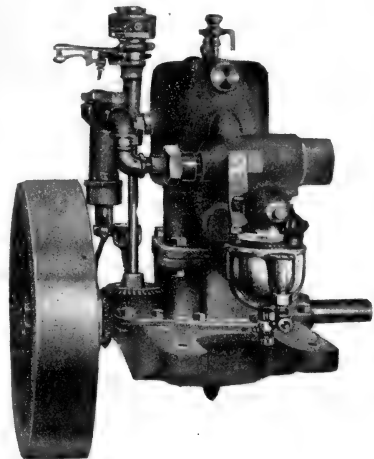
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Bore of Cylinder	4 1/2	inches
Stroke	4	"
Weight, engine only	230	lbs.
Complete shipping weight, with outfit	420	"
Diameter of Propeller, 2-blade	18	inches
Diameter of Propeller, 3-blade	16	"
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ONTARIO GOVERNMENT FISHERIES.

During the first year of its sales of fresh water fish, which ended on October 31 last, the Ontario Government distributed in the Province approximately 3,000,000 pounds of this lake food, according to the annual report of the sales branch made to the Minister of Public Works, Hon. F. G. Macdirmid. The total amount of money received for the fish during that period was \$234,594.65. After all expenditures and allowances had been made, including about \$25,000 for docks, sheds, etc., at Lake Nepigon, there was a profit of \$14,000.

One result of the Government opening up fishing operations in Lake Nepigon is that the Indians in the northern part of the Province have been able to get on the market fish which they caught in the streams. Approximately \$12,000 was paid to them by the Government. Heretofore but a small proportion of the fish caught by the Indians in that part of the Province has been marketed.

Hon. Mr. Macdirmid is well pleased with the showing made by the sales branch in the first year. "We have had a few small losses, but that was to be expected in the handling of perishable food," the Minister stated. The government is now devoting its attention to the securing of cold storage accommodation in which to place fish next summer for sale during the winter of 1919-20. About 200 tons is being placed in storage this fall by the department and it is hoped that this amount, with the fish caught during the winter months, will meet the demands of the consumers.

This year the Government secured the fish it required, in addition to that taken from Lakes Nipissing and Nepigon, by requisitioning 20 per cent of the fish caught by the fishermen throughout the Province, under the license system. It was hinted a few weeks ago that it might be necessary to increase the percentage of fish taken from the fishermen to meet the demand next year. However, Mr. Macdirmid said that this would not be necessary. He felt that 20 per cent of the fishermen's catch would be ample to meet all demands.

CHINOOK SALMON FOR ST. LAWRENCE BASIN.

After consultation with the fishery authorities of New York, the Bureau has begun an experiment looking to the acclimatization of the chinook or quinnat salmon in Lake Ontario and St. Lawrence River. Chinook eggs to the number of 820,000 have been received at the Cape Vincent (N.Y.) hatchery from the Little White Salmon station on the Columbia River. The resulting young will be planted under favorable conditions at points to be determined later.

In co-operation with this plan, the fishery authorities of the Dominion of Canada have forwarded from the Fraser River for incubation in the Government hatchery at Belleville, Ontario, 500,000 chinook salmon eggs, the young from which will be planted in international waters of the St. Lawrence basin.

CAN KEEP FISH INDEFINITELY BY NEW INVENTION.

A new drying process by which meats and fish can be kept indefinitely and then restored to their former state of freshness by the application of water, and which, it is believed, will increase the world's meat shipping capacity more than twelve times by doing away with the need for refrigeration, has been perfected in the chemical engineering laboratories at Columbia University.

JAPANESE AND SIBERIAN SALMON FISHING.

(United States Consul General George H. Seidmore, Yokohama, September 28, in United States Commerce Reports.)

The total catch of Kamtehatka salmon for this season is estimated at 400,000 boxes, including 300,000 boxes of red salmon, 50,000 boxes of other salmon, and 40,000 boxes of kind silvers, but the takes in Karafuto and the Kurile islands are very small. The quantity of red salmon is nearly equal to the original estimate, but the others are much less, trout being only one-fifth of the usual quantity. The reason for this is thought to be the unusually large arrival of red salmon, to which the fishermen have devoted most of their attention.

English and French demands are fairly active, but the high freight rates and shortage of space are restricting transactions. The producers of canned salmon stand very strong and are asking high prices, partly because of the increase in the cost of production. Probably in consequence of this, England and France are officially restricting the price of salmon, and no red salmon can be imported into England at £5 or more. Moreover, the English Government has just opened negotiations with the American Government for the importation of salmon direct, and a certain firm in England is said to have been prohibited from importing Canadian and American salmon. In America recent official prices for red and pink salmon were \$9.40 and \$6.40 respectively, per case of 48 No. 1 tall cans. These officially fixed rates are much lower than the prices in Japan.

U.S. NOT TO BUILD FISHING VESSELS.

The U.S. Government is not to take any part in the building of fishing vessels on the Atlantic or other coasts. The information was contained in a telegram from Kenneth Fowler, in charge of the fish division of the United States Food Administration, to the New York Federal Food Board. The telegram says:

"Food Administration program of building fifty steel trawlers on the Atlantic coast to enter the fish industry has been definitely abandoned and that no trawlers or fishing vessels of any kind will be built as part of any program of the Federal Government."

CANNED SALMON FROM THE YUKON.

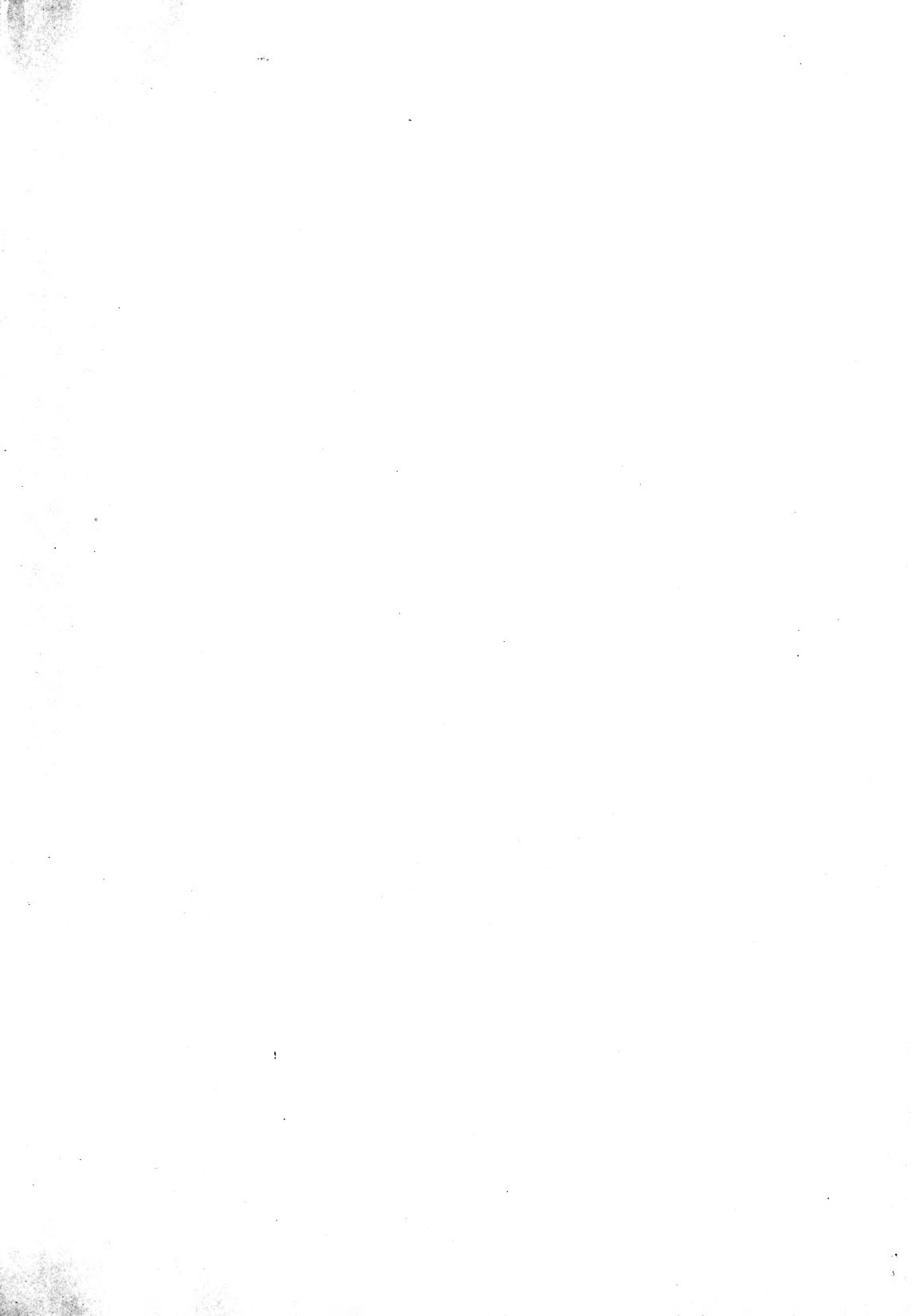
The U.S. Bureau of Fisheries has received from the packers a sample of the chinook salmon canned on the Yukon River this year by the Carlisle Packing Co. This is the first season that salmon canning has been done on the Yukon. This stream is reported to have a large run of fish, but difficulties connected with transportation, ice, and labor are so serious as to greatly retard or embarrass both commercial fishing and canning.

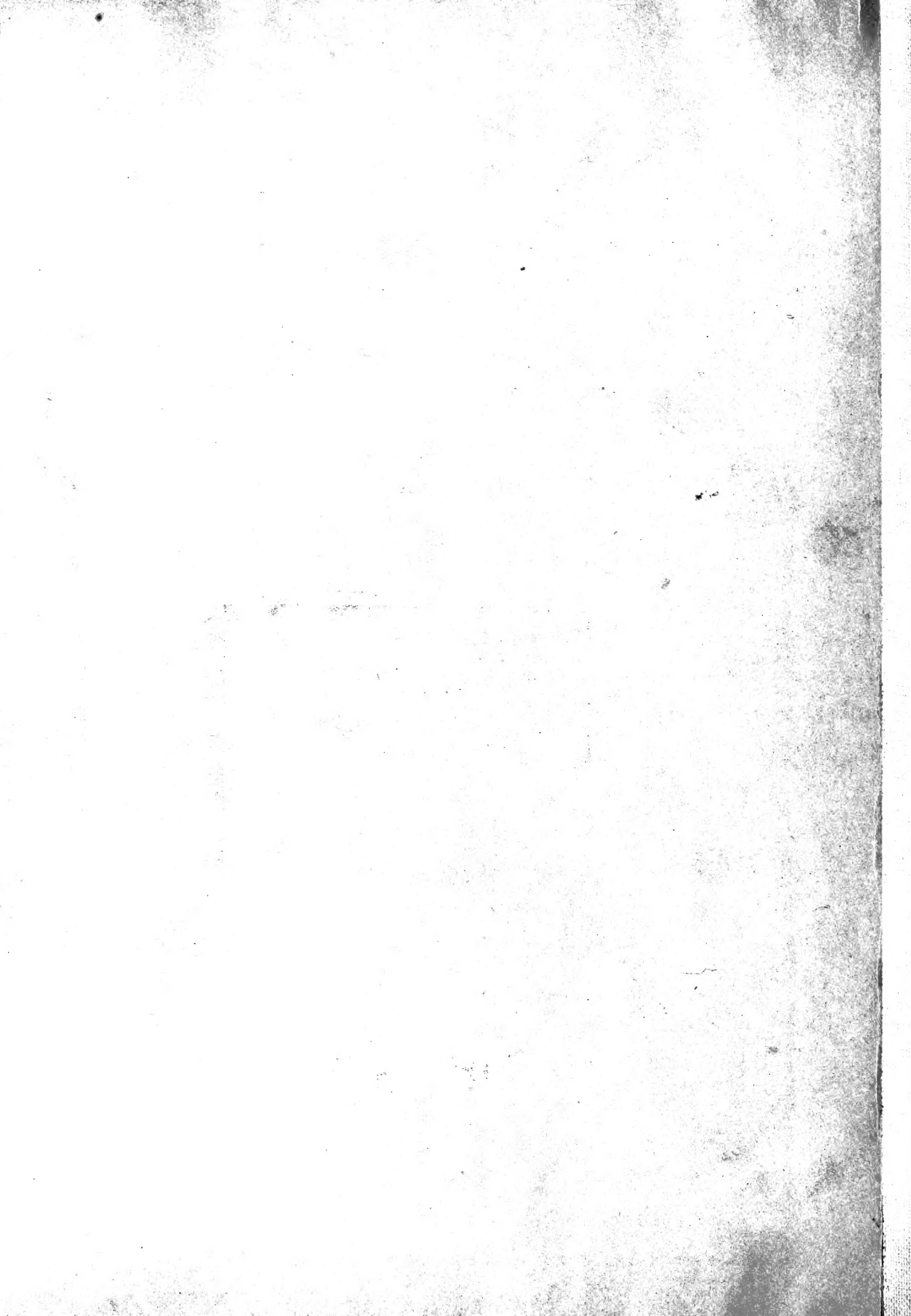
The Yukon River chinook ranks high as to color, oiliness, and flavor. The pack is regarded as the equal of that from any other stream.

MAINE SARDINE PACK IS WORTH \$17,000,000.

For the season ending December 1, Maine factories packed 2,500,000 cases of sardines. Each case contained 100 cans, making a total of 250,000,000 individual cans. It had not been expected this figure would be reached, but a big run of herring the last three weeks sent the totals climbing.

The gross value of the pack is between \$16,000,000 and \$17,000,000. The net profits to packers, however, will not be so great as usual. This is due to the extreme high price for fish and labor, combined by the government price-fixing.





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